Flood Protection Study

Martin County, Texas

September, 1990

HDR

HDR Engineering, Inc.

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EXECUTIVE SUMMARY

Martin County has experienced extensive flood damage in recent years. The difficulties began in 1986 when heavy rainfalls in the spring and fall of that year washed out many county roads. The county has spent nearly $2.5 million repairing flood damaged roads from the events in 1986 (and to some extent), 1987, and 1988. The flood damage that was experienced in 1987 and 1988 can be indirectly related to the 1986 events which filled area playa lakes, which are natural lakes that usually provide considerable storage for runoff. Without the floodwater storage capacity that the playa lakes normally provide, flood damage was experienced from the smaller rainfalls that occurred in these years. The Martin County Flood Protection Study was undertaken to develop a plan to reduce flooding impacts on the county road system.

The study was sponsored jointly by Martin County and the Texas Water Development Board (TWDB). The TWDB provided a 50% matching grant for the study. The scope of the study was to 1) identify and describe flood hazards in the county, 2) examine alternatives and propose a flood protection plan, and 3) develop an implementation plan and schedule. Most of the flooding occurred in a 130-square mile area in the north central and northeastern part of the county in areas identified as Ackerly-Knott, Brown, Three League, and Valley View Road in the report.

A conceptual plan was developed to reduce flood damages for each of these areas and for a flood control structure on Sulphur Springs Draw. Through the development of flood hydrograph models of each area, it was found that the floodwater storage capacity of existing playas could be increased by constructing low dams across the outlets. There are a sufficient number of these playas and other sites that can be used to provide inexpensive additional floodwater storage volume. The increased storage capacity would be used to temporarily detain floodwater. The detained floodwater would be discharged over a period of several months at a low rate of flow not exceeding the capacity of the existing road ditch drainage system. Each structure would reduce flood damages to roads and cropland immediately downstream, and there would be an accumulative damage reduction as structures are distributed throughout the drainage area.

Whether the storage is created on an existing playa, or a detention basin is used where no playa now exists, the dam would be provided with a small diameter drain to discharge the stored runoff back into the road ditch following the storm. If this is not done, there is a chance that additional rainfall could cause the playas and other basins to overflow with much less rainfall, and damage roads, as happened following the 1986 events. In some cases, however, a dam is not required, and all that is needed to enhance the storage of an existing playa is to provide a small diameter (24-inch) outlet pipe to drain the playa down to the existing high water elevation after each storm.

The basins would only temporarily detain water, and there would be very few years, perhaps one in five, in which a significant percentage (more than 50 percent) of the total volume of the basin would be utilized. Most years would require less than 10 percent of the storage; and in many years, the flood event would not occur during the growing season. For some of the proposed basins, providing an outlet would actually reclaim or improve productivity of land in the reservoir area. This applies to land bordering playas that is frequently flooded and has no outlet at the present time.

In all, a total of $1.5 million of improvements are proposed for these areas. The $1.5 million would purchase a protection level of about a 25-year return period on the average, but would provide substantial protection to the 50-year level at a number of locations and even beyond this at some locations. The primary monetary benefit of this plan is the reduction in damage to roads and bridges.

Secondary benefits of the flood protection plan that are difficult to quantify monetarily relate to improved vehicular movement in the county and a reduction in damages to cropland and private property. There would be fewer incidences of flooded or flood damaged roads interfering with farming, ranching, and oil field operations. Some cropland in areas downstream of proposed storage facilities would be flooded less frequently, although with currently available mapping, it is not possible to accurately determine the areal extent of the benefits. Also, perhaps a dozen homes and several businesses would experience reduced flooding. Though not precisely quantifiable, these benefits are important.

In an attempt to quantify additional benefits that might be derived from the improvements, irrigation economics and the possibility of using runoff water from the modified playas and detention basins for irrigation were also investigated in the study. The results indicate that irrigation is a good possibility, but water would be available only every other year, on the average. The possibility of supplementing the irrigation supply with groundwater was also investigated. This was also found to be a good possibility, but would require further study.

A dam on Sulphur Springs Draw was also studied. The study showed that such a dam could not be economically justified. The dam would cost about $3 million to construct, but would not significantly reduce flood damages in the downstream reach. The storage volume (40,000 acre-feet) which can be developed at the site will not significantly reduce peak discharge rates, and therefore, little benefit can be gained downstream. The project might have some potential benefit as a water supply source, but investigation of this possibility was outside the scope of this study.

The flood protection plan, as proposed, would not eliminate damage to roads, but it could reduce annual flood damages by $90,000 per year, on the average. The present worth of these damages for the next 50 years at a seven percent interest rate is $1.25 million, which is nominally less than the estimated cost of the plan of $1.5 million. However, several of the expenditures in the proposed plan may be reduced through irrigation trade-offs for flood easements and by not considering as a cost certain improvements that have already been made along Valley View Road. The estimated total value of these potential reductions is about $0.25 million. This, coupled with the other difficult-to-quantify benefits and the potential for irrigation, allows the project benefits to outweigh costs, in general.

Implementation of the plan was outlined for the project. The plan considers possible sources of funds, institutional arrangements, schedules, and constraints. The primary source of funds is expected to be an allocation of existing general and road tax revenues to the project, or a new tax levy in the amount of approximately 4¢ per $100 evaluation.

The project could be financed by general obligation bonds sold on the open market or to the Texas Water Development Board. Such bonds would be backed by local tax revenues. At a total project cost of $1,500,000 and a 20-year, seven percent bond issue, the annual debt service would be $142,000. Some additional costs would be incurred for engineering, legal, and financial services, which, if included in the bond issue, would increase the annual debt service. Also, the TWDB would require an environmental assessment if loan assistance is requested.

Alternatively, the county could implement this project over a period of 10 years by allocating an annual budget of $150,000 out of general and road revenues to the project.

There is the possibility that the county could form a separate Stormwater Control District to implement the project, and thus separate this function from general operations. The disadvantage to this option is the additional administrative cost of establishing a new subdivision of the county government.

Regarding constraints, it appears that several permits may be required. A 404 Permit, also known as a dredge/fill permit, will likely be required, although the county may be eligible for a regional General Permit which is not nearly as difficult and costly to obtain as an individual permit.

The State may require a permit to construct the proposed dams for dam safety reasons. Furthermore, if the detained water will be used for irrigation, an impoundment or diversion permit may be required.

To summarize, if the flood protection is implemented, the following recommendations are made:

- Obtain the advice of a financial advisor and determine the best means to pay for or finance the improvements, including bonding alternatives;
- Whether financed by bonds or accomplished as a 10-year staged plan, the project is estimated to require an annual allocation of $150,000 either from existing county tax revenues, or from a new county-wide tax levy of about 4¢ per $100 assessed evaluation;
- Administer the program using present county administrative staff; or, create a Stormwater Control District encompassing all or part of the county to administer the program and provide for on-going maintenance of the system;
- Coordinate efforts with SCS for technical support, encouragement of repair and proper maintenance of terraces, and possible financial support of the projects;
- Submit a 404 Permit Application to initiate review of the project by COE;
- Determine status of proposed dams with respect to state dam safety criteria; and
- Explore means to reduce land acquisition costs by offering to insure basin owners against crop losses, or assisting with purchase of some part of irrigation equipment if irrigation is appropriate.

SECTION 1

SECTION 1
MARTIN COUNTY FLOOD PROTECTION STUDY

1.0 INTRODUCTION

Since 1986, areas in northern and eastern Martin County have experienced severe flooding problems. Excessive rainfall in 1986 caused many of the playa lakes in the county to fill and overflow. The overflow of the playa lakes, combined with general flooding, resulted in severe damage to county roads and restricted travel for several years in some locations. Martin County has been in the process of repairing these roads to this day.

The primary purpose of the study was to define and characterize existing flood problems in the county and to develop cost-effective plans to reduce flood damages in the future. The study was initiated by Martin County, which financed 50 percent of the study cost. The Texas Water Development Board provided the remaining 50 percent with a matching grant from the Water Research and Planning Fund.

This study was performed by HDR Engineering, Inc. The purpose of the study was to develop a regional flood protection plan for Sulphur Springs Draw and area playa lakes in Martin County. The study defines the frequency, extent, and cost of flooding in the area; evaluates alternatives and develops a conceptual plan to alleviate flooding problems; and provides an implementation plan that examines sources of funds, appropriate entities or special districts to sponsor projects, and recommends an implementation schedule.

1.1 HISTORY OF FLOODING

Martin County's flooding problems began in 1986 when excessive rainfall in May, June, September, and October of that year destroyed much of the County's cotton crop and inundated or washed out many state and county roads. An October 9, 1986 Martin County News article reported that nearly 75 percent of Martin County roads and fields were under water at some time during 1986 and 50 percent of the fields contained lakes by that time. Copies of this and other newspaper articles are included in Appendix A.

In June 1987, flood waters in Sulphur Springs Draw which were generated from areas in the northern part of the county as well as Dawson County to the north washed out a bridge on State Highway FM 846. Some flooding in Martin County occurred, but it was not as severe as in 1986. In 1988 excessive rains returned to the county, causing crop damages estimated at $25 million by the U.S. Department of Agriculture's Agricultural Stabilization and Conservation Service. Although the rainfall was not as intense as in 1986, many of the area's playa lakes were still full from previous rainfall. Consequently, they overflowed, again causing significant damage to roads.

These continuing flood problems led to the formation of the Sulphur Springs Draw Study Group in 1988, which was initially composed of representatives from Martin, Dawson, and Howard Counties. After several meetings and a tour of the flooded area by elected officials and representatives of state agencies, representatives from Howard and Dawson Counties withdrew from active participation in the study group, apparently because the flooding problems were primarily in Martin County. Subsequently, Martin County proceeded with its own plan to study flood problems within the county. The county prepared and submitted an application for Texas Water Development Board funding, which resulted in this study.

1.2 SCOPE OF STUDY

Flooding has been reported primarily in the north and northeastern part of the county after every significant rainfall event in the past four years. The flood damage takes the form of washed-out roads, impeded traffic movement, and submerged roads, rangeland, and farmland. A few private homes, businesses, and oil and gas utilities have also experienced flood damage.

A principal function of a county is to maintain the county road system. Martin County staff estimates that in the four year period from 1986 to 1989, 58% of the county road funds were expended to repair flood-damaged roads, a total of approximately $2.25 million. In addition, losses that are more difficult to measure have resulted from disruption of farming, ranching, and oil field activities, and temporary inundation of farmland. This study focuses on preventing the inundation and erosion of the county road system.

Flooding damage to roads has occurred primarily in the areas shown on Figure 1. Most of the damage occured in the three chains of playa lakes in the county. Two are east of Sulphur Springs Draw (identified as the Ackerly-Knott area and the Brown area) and one is in the Three League area west of Sulphur Springs Draw. These areas constitute approximately 130 square miles of the county. Flood reduction plans were developed for these areas. The study also considered the Valley View Road area, which is also shown on Figure 1.

Damage to bridges and to some extent, crops, has also occurred on Sulphur Springs Draw. Part of this study was devoted to an investigation of a detention dam for flood control on Sulphur Springs Draw to reduce these damages.

Alternatives were investigated to determine cost-effective plans to alleviate flooding problems in the county. Costs were developed and compared to benefits.

Finally, an implementation plan was developed to consider: a) sources of funds; b) appropriate entities and special districts to sponsor projects; and c) an implementation schedule. Constraints to developing this plan were examined, such as 404 Permits and wetlands issues.

At the time this study was being performed, the county had been approved for participation in the Federal Flood Insurance Program for less than a year. No previous studies have been performed in the county for the purpose of establishing flood hazard areas or base flood elevations.

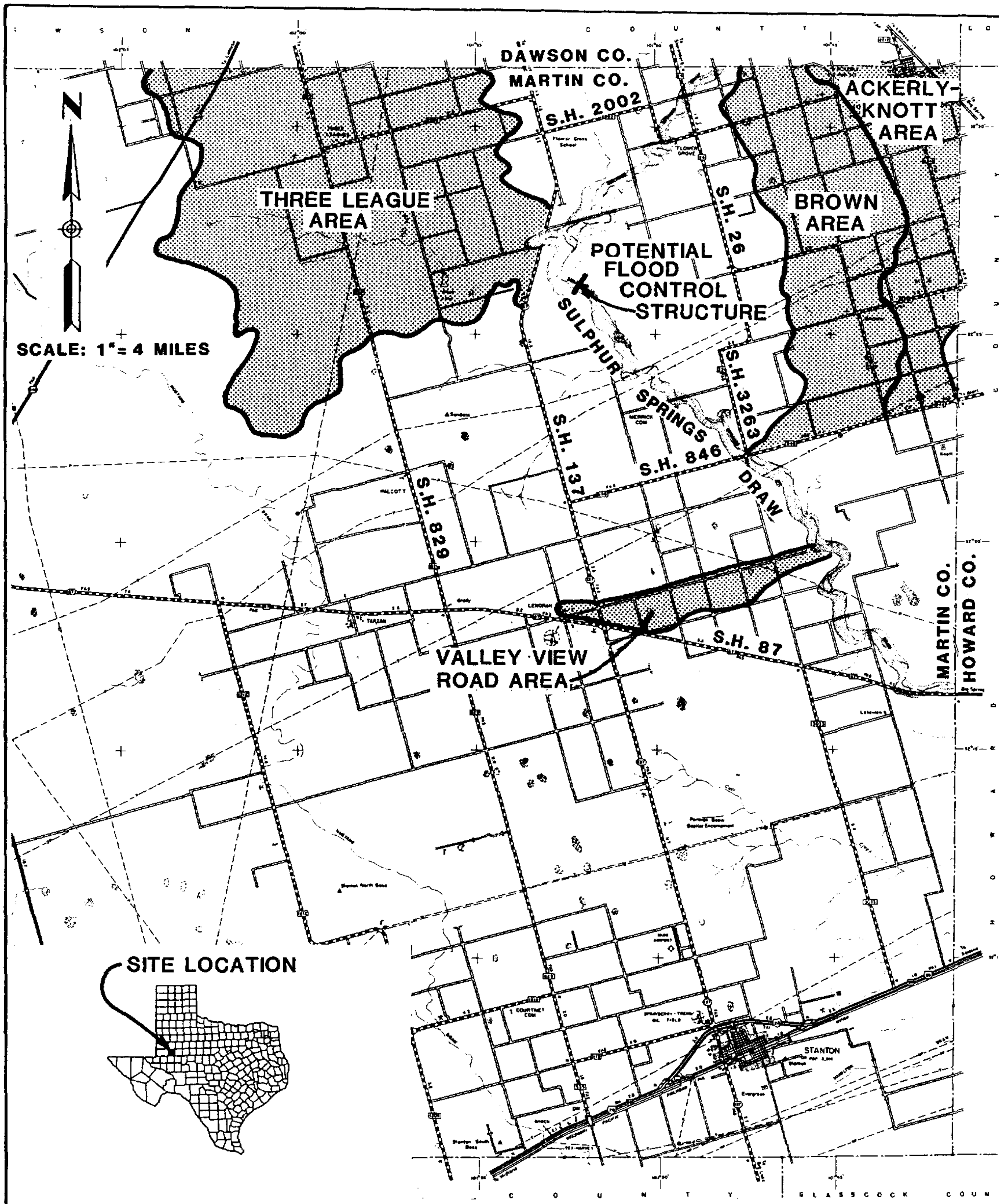
1.3 ORGANIZATION OF REPORT

Section 2 of the report provides a brief description of the study area in terms of hydrology and other factors. In this section, the various models which were used to evaluate alternatives are introduced.

Section 3 of the report provides a discussion of the alternatives considered and describes potential benefits considered in developing the flood protection plans.

Section 4 of the report is a presentation of the detailed conceptual plan for flood protection of the identified flood prone areas.

Section 5 presents an assessment of the viability of using stored flood water to irrigate cotton in the county.



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LOCATION MAP

MARTIN COUNTY FLOOD PROTECTION STUDY

JULY 1990

FIG. 1

Section 6 presents an implementation plan which considers finances, sources of funds, institutional arrangements, and constraints.

Section 7 is a summary of results and recommendations.

SECTION 2

SECTION 2
HYDROLOGY

This section describes the study area's hydrology and the development of hydrologic models used in the formulation of the plan for reducing the flood problems in Martin County.

2.1 DESCRIPTION OF STUDY AREA

Martin County is in the southern part of the High Plains region of Texas. About 300,000 acres of this farming county's 583,040 acres is cultivated. Cotton is the primary crop, along with minor crops such as alfalfa, grain sorghum, and small grains. The soils in much of Martin County are fine sandy loams which, when cultivated, are subject to excessive wind and water erosion.

Martin County has numerous naturally occuring playa lakes that influence farming practices and provide storage during runoff events. Playa lakes are natural depressions that fill periodically with runoff water and gradually dry up from the combined effects of evaporation and seepage. Most of the several hundred playas in Martin County encompass a surface area of less than 100 acres. The playas are generally farmed down to a visually discernable normal high water elevation. The playa bottom below the normal high water elevation has standing water or is moist even during extended dry periods.

Most playas do not have a defined outlet channel. When playas overflow, the outflow is a sheet flow unless the overflow point is near a road, in which case the playa spills out into the road ditch.

While the size and storage capacity of the playas varies, their generally significant storage capacity has allowed substantial portions of the Sulphur Springs Draw watershed to be considered noncontributing for storm frequencies up to and beyond the 100-year storm. In some locations in the Sulphur Springs Draw Watershed above Martin County, in excess of eight inches of rainfall is required to fill playas and produce runoff into the draw.

The average annual precipitation measured at the Lenorah weather station in Martin County is approximately 17 inches. The Lenorah gage registered a low annual precipitation of 5.29 inches and a high of 41.41 inches for the 1944 through 1988 time period. The high was experienced in 1986, which corresponds to the beginning of recent flooding problems in the area.

Much of the cultivated acreage of about 300,000 acres in the County is terraced. Terraces can be used to prevent water erosion, but if terrace end blocks are removed or not properly maintained, they can actually induce more frequent flooding and erosion of county roads. In addition, some terraces are used as diversions to prevent flow into playa lakes. This has a cascading effect in that farmers downstream are forced to construct low dikes along county roads to prevent road drainage from flooding their land. This further confines and concentrates flows in the roadway proper. By diverting runoff away from playas, the playa lakes' natural storage capacity is not used, increasing the frequency and magnitude of flooding of the county roads and downstream areas.

When the playas are full or nearly full, as they have been since 1986, the lack of storage intensifies flood damages from smaller storms. Therefore, flooding problems can be reduced by restoring natural playa storage and increasing the effectiveness of the playas to store stormwater.

It has also been noted that groundwater levels appear to have risen in recent years due to much higher annual rainfall amounts and subsequent deep percolation of excess soil moisture. Water table data provided by Martin County Underground Water Conservation District, although sparse, indicates that high groundwater levels may be keeping some playas wet in the study area.

Water quality grab samples were collected from a few selected lakes and streams in the study area. The samples were analyzed for total dissolved solids (TDS) and chlorides (CL) to determine if the water would be suitable for irrigation. Details on this investigation are explained in a later section.

2.2 HYDROLOGIC YIELD MODEL

A continuous simulation hydrologic yield model was developed for the 32 square mile Ackerly-Knott watershed in order to characterize precipitation and runoff patterns and playa lake fluctuation in the watershed and to assess the availability of water for supplemental irrigation from the playas. Daily precipitation and maximum and minimum temperatures for the 45-year time period from 1944 through 1988 were used as inputs to the model. This data was obtained from the Lenorah weather station since it is nearest to the study area.

The model utilizes daily weather records, namely precipitation and temperature, to calculate a complete moisture balance for the watershed, including runoff, infiltration, evaporation (or evapotranspiration), and deep percolation. In addition, a moisture accounting is performed for a pond or lake at the downstream end of the watershed. The lake receives runoff from the watershed, and the model assesses other inputs to and outputs from the pond, such as direct precipitation, evaporation, seepage, and overflow losses. Details of the basic model are presented in Appendix B.

Examination of both the precipitation inputs and runoff volumes calculated by the model reveal some interesting facts about the general hydrology of the area, which are discussed in the following sections.

2.2.1 Rainfall Patterns

A daily rainfall of 2.00 inches ($P_{2,24}$), which is approximately the two-year return period 24-hour rainfall, was used as the threshold amount of daily precipitation that will normally produce some runoff. Rainfalls exceeded $P_{2,24}$ in 26 of the 45 years. There was one extremely dry period from 1947 through 1956 during which the Lenorah gage recorded no daily rainfalls exceeding 2.00 inches.

There was also one wetter than normal period from 1980 through 1988 during which every year had at least one daily rainfall exceeding $P_{2,24}$. This cycle resulted in the recent flooding problems. In 1986, there were eight days in which $P_{2,24}$ was exceeded, one of which was 5.48 inches, which was the largest amount of daily rainfall for the 45-year period and equivalent to a 50-year return period event. The return period is defined as the average number of years between reoccurences of this event or an event of a greater magnitude. Because these are random events, they do not occur in any predictable time sequence. However, over a long period of time, the average recurrence interval can be calculated, and this is defined as the return period.

2.2.2 Runoff Patterns

For each daily rainfall, the yield model estimates runoff, which is dependent upon soil type, vegetative cover, and soil moisture. Therefore, a particular rainfall will produce varying amounts of runoff depending upon wetness of soil when the rain occurs. For example, in three of the years that a $P_{2,24}$ or greater rainfall occurred, there was no runoff. In the four years in which a $P_{2,24}$ did not occur, there was runoff. However, these years only accounted for 11 percent of runoff, whereas the 23 years during which a $P_{2,24}$ occurred and produced runoff accounted for 89 percent of the runoff. There were 19 years in which no runoff occurred. This data is summarized in Table 1.

With the alternatives which considered modifying playas for flood protection, there is the possibility that stored runoff could be used as a supplemental irrigation water source. More on this subject is presented in Section 5. However, these model results indicate that runoff occurs in only about 60 percent of years, and in less than half the years, the volume of runoff would be sufficient to support supplemental irrigation.

2.3 SULPHUR SPRINGS DRAW FLOOD HYDROLOGY

The Sulphur Springs Draw watershed covers a vast area that crosses western Texas and extends into eastern New Mexico (Figure 2). The watershed encompasses approximately 1,267 square miles upstream of a potential flood control dam location in Martin County. The watershed is predominantly agriculturally based; most of the area is range, pasture land, or cultivated farm land. The topography of the watershed is relatively flat.

The elevation difference between the headwaters of the watershed in New Mexico and the potential dam location in Martin County is 2,110 feet. This elevation drop occurs over a distance of 138 miles, resulting in an average watershed slope of 15.3 feet per mile. Significant portions of the watershed have a large number of playa lakes. It was estimated that these playa lakes effectively control 886 square miles of the watershed, allowing little or no runoff to reach Sulphur Springs Draw. Playa lakes in the remaining 381 square miles also play a significant role in reducing the amount of runoff that reaches the main channel.

2.3.1 Hydrologic Model Development

One of the alternatives considered to reduce flooding damage in Martin County was a flood control dam located on Sulphur Springs Draw. In order to evaluate this proposed flood control dam, flood hydrographs were computed using a rainfall-runoff model which simulates the watershed's response to precipitation. The U.S. Army Corps of Engineers Flood Hydrograph Package, HEC-1 (HEC, 1988), was used to model the flood hydrology of the watershed. The model simulates the rainfall-runoff process and develops runoff hydrographs, peak discharges, and runoff volumes.

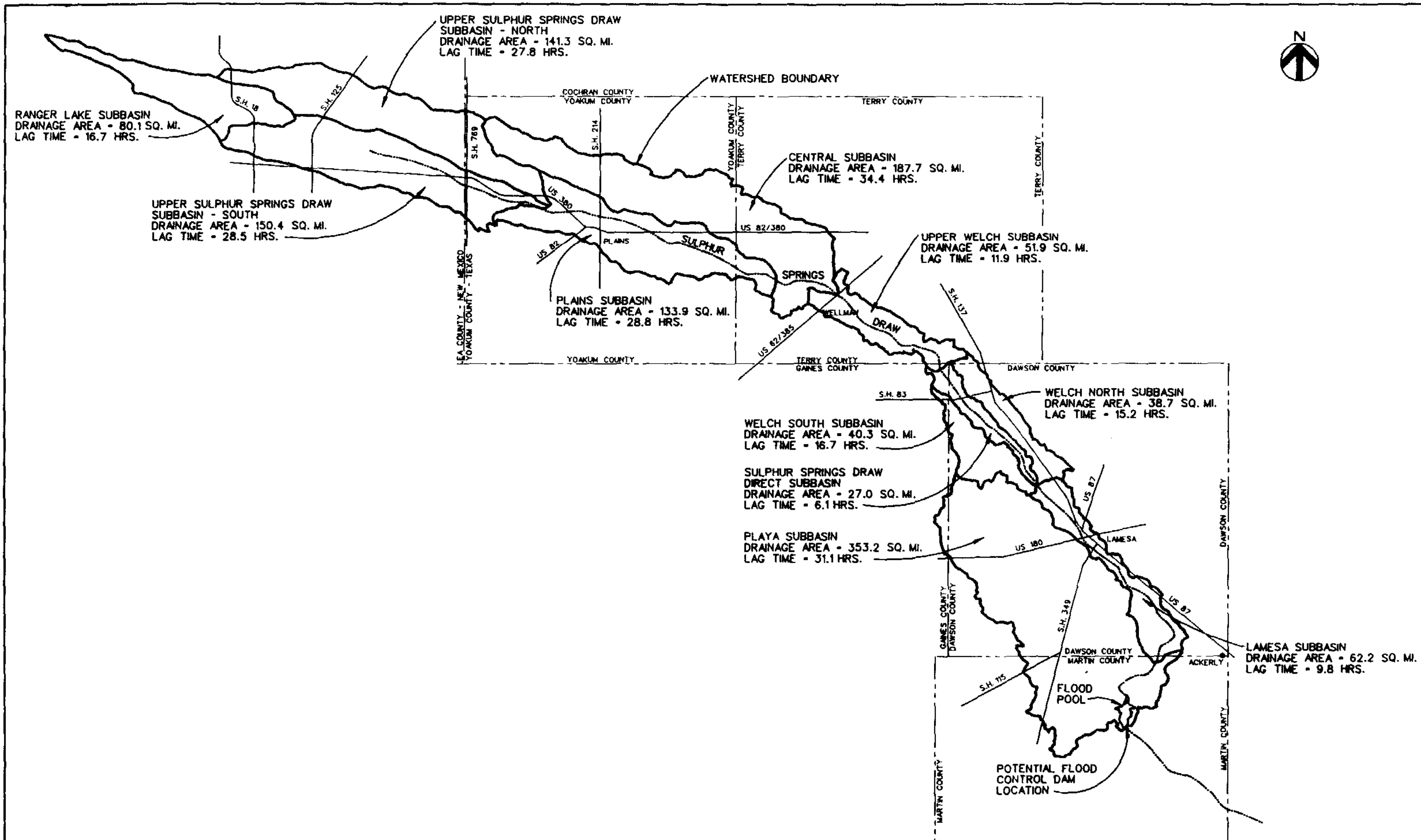
The HEC-1 model has numerous options for generating, connecting, and routing flood hydrographs. The Soil Conservation Service methodology was selected as the most appropriate option to generate flood hydrographs. Information required by the HEC-1 model includes:

- watershed area;
- precipitation amounts;
- runoff curve number;
- basin lag time; and
- channel routing parameters.

TABLE 1
ANNUAL PRECIPITATION AND ESTIMATED RUNOFF
(1944-1988)

Year	Total Precipitation (in.)	Estimated Total Runoff (in.)	Recorded Amounts Exceeding 2.00 in. in 24 hrs.
1944	13.70	0.09	2.25
1945	19.57	0.19	2.22
1946	13.76	1.07	5.35
1947	13.97	0.81	-
1948	5.24*	0.00	-
1949	14.76*	0.00	-
1950	9.90*	0.00	-
1951	7.60	0.00	-
1952	11.55	0.00	-
1953	10.38	0.00	1.97
1954	9.02	0.00	-
1955	12.26	0.00	-
1956	6.98	0.00	-
1957	28.15	0.62	3.75, 2.97
1958	18.45	0.14	-
1959	21.63*	0.19	2.88
1960	20.95	0.14	2.11,2.07,3.01
1961	20.21	0.14	2.91,2.06
1962	20.63	1.18	3.14,3.70
1963	15.62	0.00	-
1964	8.98	0.00	-
1965	13.37*	0.00	-
1966	23.73	0.08	2.67,2.48
1967	10.00	0.00	-
1968	22.35*	0.31	2.40
1969	26.09	0.40	-
1970	14.74	0.10	-
1971	18.95*	0.05	2.38,2.47
1972	14.89*	0.03	-
1973	13.79*	0.23	2.09
1974	25.10	0.82	2.04,2.06
1975	23.79	0.26	2.17,3.26
1976	17.07	0.00	-
1977	10.14	0.00	2.10
1978	19.52*	0.00	2.08
1979	16.60	0.07	2.80
1980	23.00	0.55	2.20,2.17
1981	18.81	0.00	-
1982	16.65	0.00	-
1983	11.60	0.85	2.38,2.28
1984	20.20	0.48	2.25,4.33
1985	18.71	1.60	3.53
1986	41.41	3.15	2.00,2.40,2.37,2.39,5.48,2.95,2.59
1987	13.28*	0.00	2.25
1988	20.28*	0.14	2.18,2.87
Annual Average	16.82	0.30	

*Years in which a month or more of data is missing. These years will underpredict rainfall by an estimated 3% on the average.



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SULPHUR SPRINGS WATERSHED

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FIG. 2

2.3.2 Watershed Description

The watershed was subdivided into smaller areas called subbasins in order to create a more detailed hydrologic model. The subbasins modelled are listed in Table 2 along with corresponding drainage areas. Figure 2 shows the subbasin locations.

TABLE 2
SULPHUR SPRINGS DRAW WATERSHED
SUBBASINS

SUBBASIN	DRAINAGE AREA (SQ. MILES)
Ranger Lake	80.1
Upper Sulphur Springs Draw - North	141.3
Upper Sulphur Springs Draw - South	150.4
Plains	133.9
Central Sulphur Springs Draw	187.7
Upper Welch	51.9
Welch North	38.7
Sulphur Springs Draw - Direct	27.0
Welch South	40.3
Lamesa	62.2
Western Sulphur Springs Draw	353.2

2.3.3 Precipitation Amounts

In order to develop flood hydrographs for various return interval events, precipitation amounts that correspond with each of these return interval events were modelled using HEC-1. Point rainfall amounts for the two-year, five-year, 10-year, 25-year, 50-year, and 100-year storms were obtained from Weather Bureau TP-40 (1961) and National Weather Service HYDRO-35 (1977). These values were used in HEC-1 to develop design storms for determining runoff hydrographs. The storm rainfall was distributed using the "balanced storm" procedure in HEC-1, which creates a triangular shaped hyetograph from the given rainfall depths. Areal rainfall reduction factors were used in the model to reduce the point rainfall amounts to an average depth of rainfall for large watersheds. HEC-1 reduces the point rainfall amounts according to recommendations in Weather Bureau TP-40. A point rainfall depth versus duration summary for Martin County is given in Table 3.

To evaluate dam height and emergency spillway requirements, the probable maximum flood (PMF) was computed. The probable maximum precipitation (PMP) was used in HEC-1 to compute the probable maximum flood hydrograph. The PMP is defined as the greatest possible amount of precipitation for a given duration over a given size storm area at a geographic location. PMP amounts for the Sulphur Springs Draw watershed were obtained from Hydrometeorological Report No. 51, "Probable Maximum Precipitation Estimates - United States East of the 105th Meridian," a publication of the National Weather Service (1978). The maximum basin average precipitation for the Probable Maximum Storm (PMS) was determined using the computer program HMR52 (HEC, 1984), which computes the maximum basin average precipitation for the PMS by determining the critical storm-area size, orientation, centering, and timing which produces the maximum precipitation in accordance with the criteria in Hydrometeorological Report No. 52 (NWS, 1982). The 24-hour duration basin average PMP for the Sulphur Springs Draw watershed was calculated to be 12.13 inches, and the 72-hour duration PMP was calculated to be 15.74 inches. It should be noted that these PMP values are averaged over the entire watershed. Portions of the watershed near the center of the storm experience much more rainfall than the basin average rainfall, while those portions farther away from the storm center experience less rainfall than the basin average. Rainfall depths for subbasins ranged from as little as four inches for those farthest away from the center to as much as 26 inches for those nearest the center.

TABLE 3
POINT RAINFALL AMOUNTS FOR MARTIN COUNTY, TEXAS

	Point Rainfall Depth (Inches)					
Storm Duration	**2-Year Storm**	**5-Year Storm**	**10-Year Storm**	**25-Year Storm**	**50-Year Storm**	**100-Year Storm**
5 minutes	0.42	0.51	0.58	0.67	0.75	0.82
15 minutes	0.80	1.00	1.20	1.40	1.50	1.70
1 hour	1.40	1.90	2.20	2.60	3.00	3.30
2 hours	1.60	2.20	2.60	3.10	3.40	3.80
3 hours	1.70	2.30	2.80	3.30	3.70	4.20
6 hours	2.10	2.80	3.40	3.80	4.40	5.10
12 hours	2.40	3.30	3.90	4.70	5.30	5.90
24 hours	2.80	3.90	4.60	5.30	6.10	6.90

2.3.4 Runoff Curve Number

The runoff curve number indicates the runoff potential of a hydrological soil-cover complex. The curve number is based on soil type, antecedent moisture condition, and land use. For each of the drainage basins listed in Table 2, a runoff curve number was determined based on the soil type and land use condition. The Sulphur Springs Draw watershed soils are predominantly characterized as hydrologic soil group B (SCS, 1972). These types of soils have moderate infiltration rates and consist of chiefly moderately deep to deep soils that are moderately well to well drained. Generally, these soils would be classified as silt loam or sandy silt loam.

For the two-year, five-year, 10-year, 25-year, 50-year, and 100-year flood events, average antecedent soil moisture conditions (AMC-II) were assumed. When evaluating the PMF, saturated soil moisture conditions (AMC-III) were assumed. In general, a runoff curve number of 74 was used for average runoff conditions and a runoff curve number of 88 was used for saturated runoff conditions throughout the watershed. Antecedent soil moisture is the soil moisture level assumed to exist at the time the storm occurs.

2.3.5 Basin Lag Times

The lag time, which is the length of time from the centroid of rainfall excess to the peak of the runoff hydrograph, determines the shape of the runoff hydrographs. The lag time is related to the basin length, shape, and slope. Lag times were computed for each of the Sulphur Springs Draw subbasins using procedures described in TR-55 (SCS, 1986). The lag times for each of the Sulphur Springs Draw subbasins are listed in Table 4.

TABLE 4 SULPHUR SPRINGS DRAW SUBBASIN LAG TIMES	
Subbasin	**Lag Time (Hours)**
Ranger Lake	16.7
Upper Sulphur Springs Draw - North	27.8
Upper Sulphur Springs Draw - South	28.5
Plains	28.8
Central Sulphur Springs Draw	34.4
Upper Welch	11.9
Welch North	15.2
Sulphur Springs Draw - Direct	6.1
Welch South	16.7
Lamesa	9.8
Western Sulphur Springs Draw	31.1

2.3.6 Channel Routing Parameters

Routing of flood flows through channel reaches was accomplished using the Muskingum channel routing option in HEC-1, which requires two input parameters: 1) travel time; and 2) Muskingum weighting factor. The travel time for each of the channel routing steps was computed using the measured channel length and an average channel velocity. The channel length was measured from U.S.G.S. 7.5 minute topographic maps, while the average channel velocity was determined using a hydraulic model (HEC-2; see Appendix D) developed for the lower portion of Sulphur Springs Draw. A Muskingum weighting factor of 0.2 was used for each of the channel routing steps.

2.3.7 Hydrologic Model Results

For the purpose of evaluating the potential dam site for flood control benefits, flood hydrographs for the 10-year, 25-year, 50-year, and 100-year flood events were computed along with the PMF. The results of the HEC-1 model at the potential dam site on Sulphur Springs Draw are presented in Table 5. The HEC-1 model and summary print-out are given in Appendix C.

TABLE 5 HYDROLOGIC MODEL RESULTS			
	Peak Flow	**Runoff Volume**	
Flood Event	**(cfs)**	**(Acre -feet)**	**(Inches)**
10-Year	9,879	52,719	0.78
25-Year	12,320	65,552	0.97
50-Year	16,008	85.775	1.27
100-Year	21,228	112,132	1.66
PMF	168,725	1,082,337	16.02

2.4 FLOOD HYDROLOGY OF FLOOD PRONE AREAS IN MARTIN COUNTY

For the purpose of developing detailed flood protection plans, the flood hydrology of three areas in Martin County was modelled using the HEC-1 flood hydrology package. The three areas are: 1) Ackerly-Knott; 2) Brown; and 3) Three League. The Ackerly-Knott and Brown areas are shown on Figure 3, and the Three League area is shown on Figure 4. These areas have all experienced serious flooding problems during and since 1986 and also have playa lakes that appear to offer a cost-effective means to reduce flood damage.

The basic modelling approach for each of these areas was similar to the approach taken for Sulphur Springs Draw discussed in the previous section. Each area was divided into smaller subbasins and point rainfall amounts for the two-, five-, 10-, 50-, and 100-year return interval rainfall events from Table 3 were applied to each subbasin. A runoff hydrograph was calculated for each subbasin using the "balanced storm" procedure in HEC-1 and the appropriate point rainfalls, runoff curve number, and basin lag times as discussed in Sections 2.3.3 through 2.3.5, respectively.

The hydrographs from individual subbasins were then routed and combined to produce hydrographs at selected design points. The model thus generated peak flow rates and volumes that were used to develop flood protection plans and to assess the level of protection that a particular plan provided. Computer print-outs of the HEC-1 models for these areas are included in Appendices E through H, respectively.

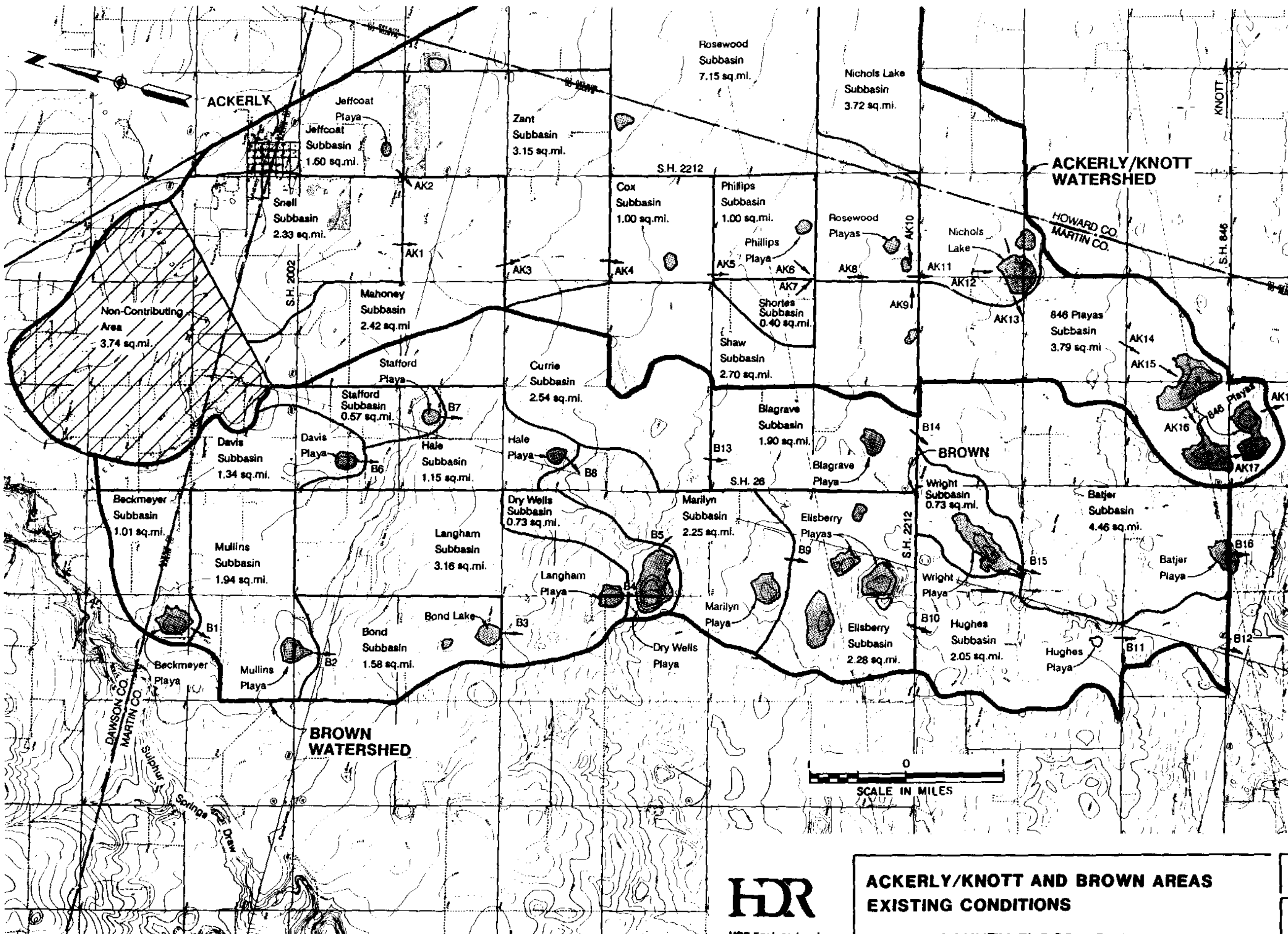
2.4.1 Ackerly-Knott Area

The Ackerly-Knott area experienced the most severe flooding in the county in the 1986 to 1988 time period. As can be seen in Figure 3, the area has a number of playa lakes that increase in size downstream from Ackerly to State Highway (SH) 846.

The area experiences flooding because the existing playa storage volume is not large and because of some particular farming operations. In some cases, diversion terraces have been used to divert runoff from the playas to the road ditches. There has also been some channeling in the fields to enhance drainage. However, road ditches serve as the primary drainage channels in the area, and the ditches are generally inadequate due to limited right-of-way. Because road ditches are inadequate, berms have been constructed along the roadways downstream to prevent flooding of fields. This further tends to concentrate flows within road right-of-way. Rainfalls in excess of two-year return period floods can cause significant damage to the unpaved country roads, especially if the storm occurs during wet conditions when soils are saturated and playas are full. These were the conditions during and following the heavy rainfalls in 1986, and they continued for about three years.

The playa lakes in this 32 square mile area provide only a limited storage capacity for excess runoff. Peak flow rates and volumes calculated by the HEC-1 model for two-, five-, 10-, 25-, 50-, and 100-year return periods for existing conditions are given later in Section 4. In most cases, the playas do not have sufficient storage to contain even a two-year event.

The existing storage capacity of playas is given in Table 6. These are rough estimates determined from five-foot contour interval USGS 7.5-minute maps prepared in 1966, which is currently the best available mapping for Martin County.



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ACKERLY/KNOTT AND BROWN AREAS EXISTING CONDITIONS

MARTIN COUNTY FLOOD PROTECTION STUDY

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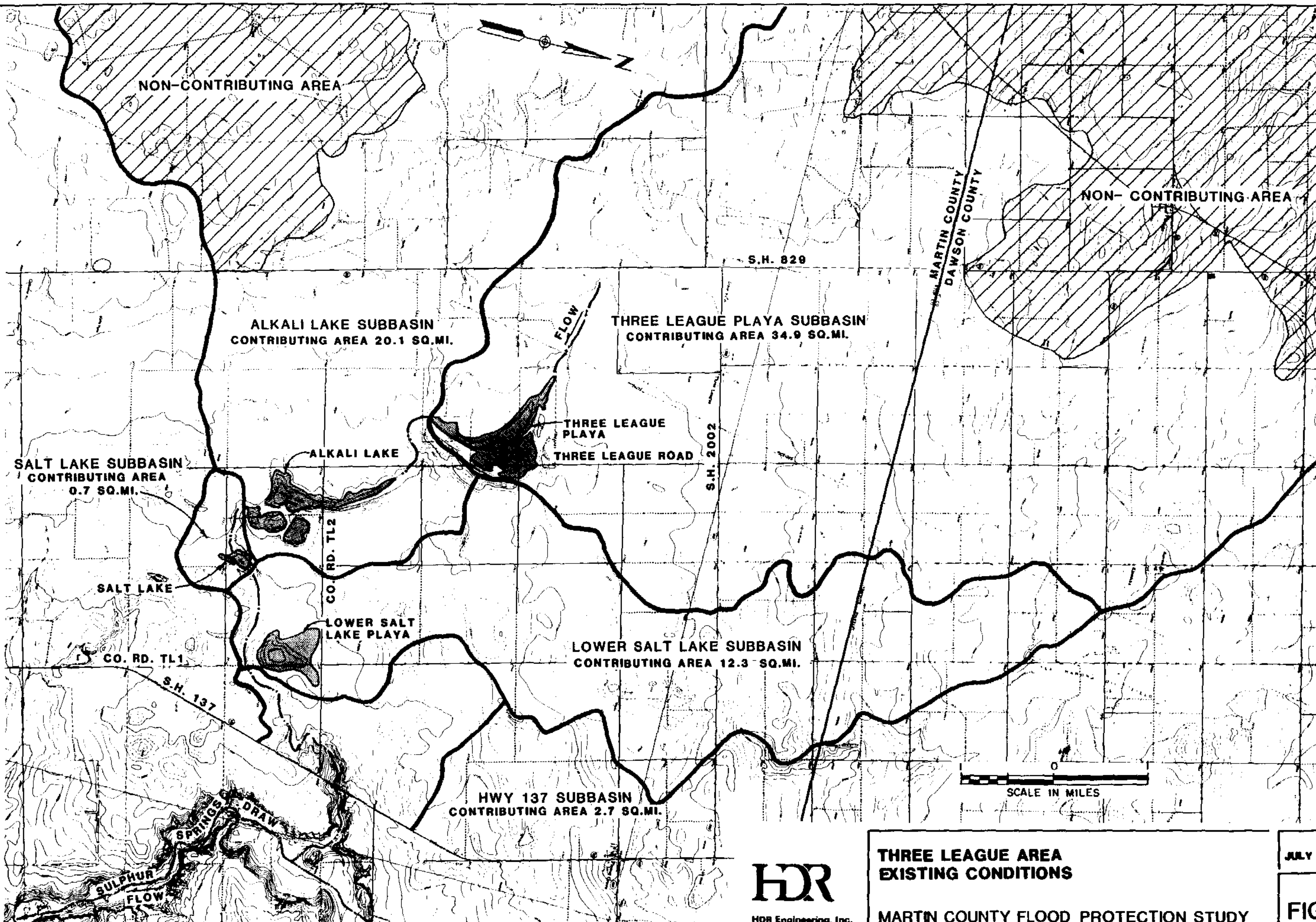
FIG. 3



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THREE LEAGUE AREA
EXISTING CONDITIONS

MARTIN COUNTY FLOOD PROTECTION STUDY

JULY 1990

FIG. 4

TABLE 6
ACKERLY-KNOTT AREA
PLAYA STORAGE VOLUMES*

Playa Location	Volume (Ac-Ft)	Surface Area (Acres)
Jeffcoat Playa	0	0
Phillip Playa	0	21
Rosewood Playa	0	21
Nichol's Lake	388	72
SH 846 Playa A	357	110
SH 846 Playa B	216	66
SH 846 Playa C	258	69
Total	1219	359

* Natural storage above the normal high water elevation.

The total playa volume of 1219 acre-feet represents approximately 0.7-inch of runoff for the 32 square-mile watershed. However, about 90 percent of this storage is in the Nichol's and SH 846 playas at the south end of the area. The small playas in the upper part of the watershed either have no storage or the drainage into them has been diverted so the storage is not effective. The floodwaters eventually accumulate in the Nichols and SH 846 playas, which in July of 1990 were still partly full from the 1986 to 1988 events. The SH 846 playas have no natural outlet and SH 846 was flooded during this time period. The road has been raised several feet to reduce the potential for flooding in the future.

2.4.2 Brown Area

The Brown area is similar to the Ackerly-Knott area, except the flooding problems have not been as severe. This area has a larger number of playas that are more evenly distributed throughout the area, as shown in Figure 3.

Cultivated agriculture predominates in this area, similar to the Ackerly-Knott area and the entire northeast part of the county. The open-ended terraces and diversions away from the playas have had a flood damage impact on the local county road system, although not as serious as in Ackerly-Knott because there is a better distribution of natural storage in the area.

Peak flow rates and volumes for the two-, five-, 10-, 25-, 50-, and 100-year return periods for existing conditions are given in Section 4. The surface area and storage volume of playas in the Brown area are shown in Table 7.

2.4.3 Three League Area

The Three League area is west of Sulphur Springs Draw in north central Martin County. As shown in Figure 4, the area contains several large playas that presently provide significant storage of runoff. However, one of the contributing areas in this basin does not have playas and has added to flooding problems. This area is identified as Alkali Lake Subbasin.

TABLE 7
BROWN AREA
PLAYA STORAGE VOLUMES*

Playa Location	Volume (Ac-Ft)	Surface Area (Acres)
Bechmeyer Playa	154	43
Mullins Playa	111	29
Langham Playa	114	28
Dry Wells Playa	526	96
Davis Playa	68	20
Stafford Playa	0	13
Hale Playa	0	14
Marilyn Playa	122	38
Blagrave Playa	76	27
Wright Playa	322	88
Ellsberry Playa	160	64
Hughes Playa	0	4
Batger Playa	0	4
Total	1672	509

* Natural storage above the normal high water elevation.

From 1986 to present, a number of county roads in this area have been damaged or have been underwater for extended periods of time. The county road identified as Three League Road in Figure 4 was diverted around the playa for several years until the county was able to build up the roadbed about five feet to maintain a dry crossing.

In this area, therefore, the primary flooding problem is that the existing playas extend across or along roads in several locations, resulting in road washouts or blockage from high water. Peak flow rates and volumes calculated by the HEC-1 model for two-, five-, 10-, 25-, 50-, and 100-year return periods for existing conditions are given at selected locations in Section 4. Again, it is noted that the playas in the area provide fairly large natural storage capacity (see Table 8).

TABLE 8
THREE LEAGUE AREA
PLAYA STORAGE VOLUMES*

Playa Location	Volume (Ac-Ft)	Surface Area (Acres)
Alkali Lake	1182	199
Hughes Playa	168	24
Batger Playa	880	153
Total	2230	376

* Natural storage above the normal high water elevation.

2.4.4 Other Areas

In several meetings with the Martin County Commissioners Court, the areas experiencing flood problems were identified and discussed. The areas experiencing the greatest problems were modelled in detail as presented. Several other areas were considered in the flood protection plan, but were not modelled in as great a detail for various reasons. A summary of considerations and conclusions for these areas follows.

Valley View Drive Area. This area is show on Figure 5. Valley View Road essentially becomes a free flowing channel during heavy storm events, transporting runoff generated along its right of way from the high point at Lenorah to Sulphur Springs Draw seven miles to the east. In this seven-mile distance, the road drops 300 feet in elevation. Unlike the areas previously discussed, this area has no playas and very few locations where storage could be created. Furthermore, farming operations have tended to divert overland flows from natural cross-field drainage courses to the road right-of-way. Over the years, this has resulted in the road becoming a major drainage channel. The road bed is eight to 12 feet below the natural grade (i.e., the elevation of abutting fields) for several miles of its length.

However, the county has undertaken projects to minimize the impact of frequent flooding on Valley View including deepening and widening the capacity of side ditches, (sometimes at the expense of up to one lane of roadway), paving intersections, and paving side slopes at intersections to form stabilized flow through sections. At the present time, the county is satisfied that these precautions will eliminate the problem of the road becoming impassible every time there is significant rainfall. Information which will be useful in sizing road ditches on Valley View Road is presented in Section 4.

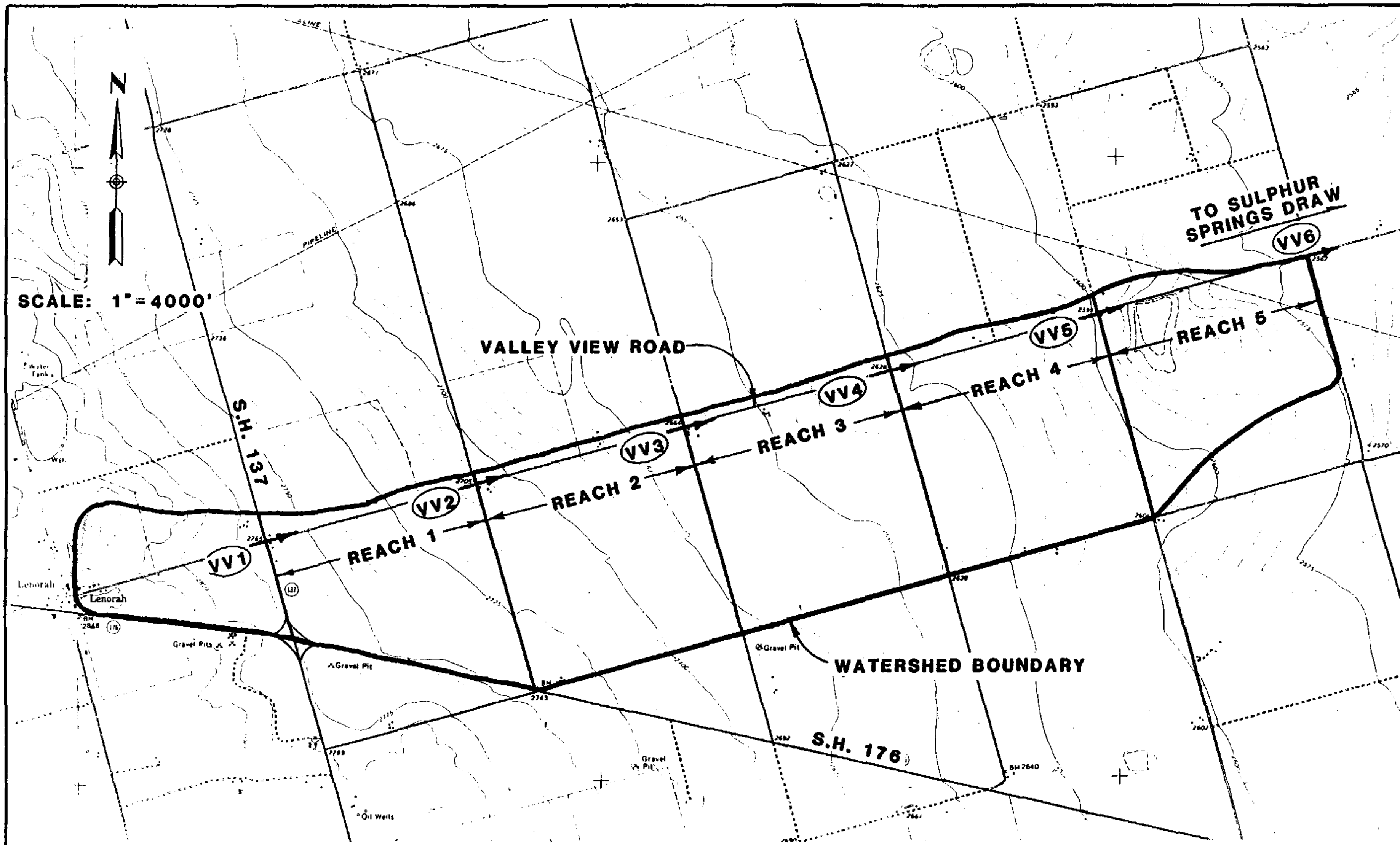
Because there are few locations in this area where storage could be inexpensively developed, the county is doing what it can, short of getting landowners to redirect runoff to natural channels, rebuilding and blocking terrace channels, and perhaps constructing stock tanks where it would benefit the farming operations.

It is noted that other east-west roads in this area also experience these problems, but to a much lesser extent than Valley View Road.

City of Ackerly. The City of Ackerly in the northwest corner of Martin County is divided by the Dawson-Martin county line. The city has a population of less than 400. The city has no storm sewer system, and the streets currently provide the main conveyance for flood flows. Therefore, streets flood whenever a significant rainfall occurs. Developing a detailed stormwater control plan for Ackerly was considered to be outside the scope of this study, other than to acknowledge that Ackerly is part of the Ackerly-Knott area that was modelled in detail, and stormwater flows from Ackerly were considered in the flood protection plan for the area to the south of Ackerly.

Three League Gin. The Three League area, which was previously discussed, derives its name from the community of Three League, which consists of a cotton gin and a number of homes and businesses.

Flooding is experienced in this area, but problems have been reduced since the State installed a series of 24-inch diameter culverts to convey floodwater from north to south across SH 2002. However, some flow originating from northwest of Three League still causes problems in the area. A plan to divert these flows away from this area is included in this study (see Section 4).



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VALLEY VIEW ROAD AREA
EXISTING CONDITIONS

MARTIN COUNTY FLOOD PROTECTION STUDY

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FIG. 5

State Highways. State highways in Martin County have also experienced damage in recent years. The Texas Department of Highways and Public Transportation has undertaken a number of projects, including the replacement and substantial improvement of the SH 846 crossing of Sulphur Springs Draw, the installation of culverts at many other locations, and the raising of roadways at a few locations. The improvements that are proposed in this study are therefore primarily directed toward improving the county road system. These improvements would not directly affect the state highway system, although there would likely be some indirect benefits in terms of the reduced conveyance requirements at some state highway drainage crossings.

SECTION 3

SECTION 3
PLAN FORMULATION

This section discusses the various alternatives and factors that were considered in developing a flood protection plan for Martin County. Topics presented in this section include structural and nonstructural approaches and benefit-cost analysis, which influenced the selected type and level of flood protection.

3.1 STRUCTURAL AND NONSTRUCTURAL APPROACHES

A comprehensive flood protection plan generally considers both structural and nonstructural approaches to problems and may ultimately be comprised of a combination of different alternatives. Structural controls consisting of dams, detention basins, channels, storm sewers, and levees are usually necessary in a flood protection plan. Nonstructural controls such as land use controls, purchase of flood prone areas, removing structures from flood prone areas, relocating residents, and flood-warning systems may or may not be applicable.

Martin County is a sparsely populated, rural area with fairly straightforward flooding problems. The primary issue is damage to and loss of use of county roads during and following a flood event. Therefore, certain structural and nonstructural controls are not applicable. In particular, nonstructural controls, such as zoning or subdivision regulations, would not be applicable in this rural setting, unless substantial development were to begin to occur.

Other than damage to roads, the losses due to floods have been damage to cultivated land. The United States Soil Conservation Service (SCS), through its watershed protection and erosion control programs, has for many years encouraged and cost-shared soil and water conservation practices to reduce flooding and erosion on farms. Therefore, this study does not consider flooding of private land, except for the leasing or purchase of land for storage of floodwaters, as part of the county road protection plan. Therefore, in developing the flood protection plan, efforts were directed to structural controls to reduce flooding of county roads.

3.2 BENEFIT-COST ANALYSIS

Flood protection plans are generally not considered to be economically feasible unless the benefits exceed the costs. Sometimes, this results in the conclusion that the only cost-effective alternative is to do nothing. For Martin County, the following factors were considered in the benefit-cost analysis.

3.2.1 Benefits

Martin County staff estimates that nearly $2.25 million, or 58 percent, of the county's road funds in the past four years were spent to repair flood-damaged roads. Considering that some repairs are still being made, the county expenditures will likely exceed $2.5 million by the end of 1990. The result has been the delay of normal noncritical maintenance and planned improvements of county roads. If the recent flooding is considered to be a 50-year recurrence interval event, the county could have afforded to spent $50,000 per year on flood prevention in the past 50 years to avoid the recent flood losses. This is a simple approach which ignores the occurrence of flood damage in other years.

A more desirable way to calculate flood damages is to develop a damage cost-frequency curve. The area under such a curve represents the annual average damages incurred. The difficulty of preparing a damage cost-frequency curve is in knowing what the actual damages were for at least several points on the frequency curve. This data does not exist for Martin County, and therefore must be estimated.

In the absence of data on actual flood damages, a method was derived to estimate historical flood damages. Utilizing the yield model results presented in Section 2.2 for the 45-year simulation period, simulated flood volumes for previous years were compared to the 1986 event, which was easily the most severe event in the 45-year period. Annual flood volumes were considered to be relatable to the level of flood damage that may have occurred. Synthetically generated annual flood flows for the Ackerly-Knott area from the yield model presented in Section 2 are tabulated in decreasing order of magnitude in Table 9.

TABLE 9
PROBABILITY DISTRIBUTION OF ANNUAL RUNOFF VOLUMES
ACKERLY-KNOTT AREA

Year	Annual Runoff Volume (acre-inches)	Rank n (N=45)	Assumed Probability P=n/N+1
1986	64,997	1	0.022
1985	33,059	2	0.043
1962	24,439	3	0.065
1946	22,109	4	0.087
1983	17,613	5	0.109
1974	16,922	6	0.130
1947	16,804	7	0.152
1957	12,807	8	0.174
1980	11,322	9	0.196

Table 9 reflects that significant runoff occurred in only nine of the 45 years in the sequence. As previously mentioned, 19 years had no simulated runoff and for the remainder, less than 10,000 acre-inches were generated. Since these events were not expected to cause significant damage, they were not included in this analysis.

Table 9 can be interpreted as follows. The year 1986 had the largest runoff in 45 years; therefore, the probability that such an event will occur again in any given year is about two percent, or about once in 45+1 years. The ninth ranked volume, 1980, has a one in five chance (9/46) of occurring this year, or in any given succeeding year.

Since there was only one data point for damage cost related to storm events--that is, the 1986 runoff caused $2.5 million in damages--an equation to relate runoff volume to damage cost was assumed, as follows:

$$D_{(x)} = D_{(86)} (R_{(x)}/R_{(86)})^{1.5}$$

in which $D_{(x)}$ is the damage cost for year X, $D_{(86)}$ is $2.5 million, $R_{(x)}$ is the runoff volume for year X, and $R_{(86)}$ is the 1986 runoff volume.

Applying this equation to the runoff volumes in Table 8 results in the damage cost shown in Table 10 (Column 2). Since the annual damage cost is the total damage multiplied by the probability that this will occur in a given year, the annual flood damages can be calculated as shown in Table 10. In this table, it is assumed that larger events than 1986 will occur, but would not cause damage in excess of $2.5 million. Also, damages were assumed to be zero for years with runoff less than that for 1980. Both of these assumptions are conservative in that they tend to reduce the calculated total annual damage cost. Also, the equation reduces the damage costs calculated for events three through nine in Table 10.

TABLE 10
ANNUAL ROAD DAMAGE COSTS FOR MARTIN COUNTY

Year	Damage Cost	Probability	Incremental Probability	Damage Cost Average	Annual Damage Cost
	>2,500,000		0.022	$2,500,000	$55,000
1986	$2,500,000	0.022			
			0.021	1,703,000	35,800
1985	906,000	0.043			
			0.022	741,000	16,300
1962	576,000	0.065			
			0.022	536,000	11,800
1946	496,000	0.087			
			0.022	425,000	9,400
1983	353,000	0.109			
			0.021	342,000	7,200
1974	332,000	0.130			
			0.022	330,000	7,200
1947	329,000	0.152			
			0.022	274,000	6,000
1957	219,000	0.174			
			0.022	200,000	4,400
1980	181,000	0.196			
			0.022	90,000	2,000
Total Annual Road Damages =					$155,100

From this table, it can be concluded that Martin County may spend, on the average, about $155,000 annually on road maintenance to repair flood damaged roads. However, the expenditures would occur periodically because a damaging storm event occurs only once in five years, on the average.

It can be further concluded that Martin County can afford to spend up to $155,000 annually on flood protection projects to avoid periodic large expenditures to repair damaged roads, especially if the desired protection level is achieved in a number of years. The benefits will continue to accrue beyond the period of time that the flood protection projects are implemented.

Benefits that are much more difficult to quantify in monetary terms should also be considered. The flood protection plan will have significant impact on traffic movement in the county. There would be fewer occasions when farming, ranching, and oil field operations would be hampered by flooded roads. Although the primary benefit of the plan would be reduced damage to roads, there would also be some cropland that would be flooded less frequently. The mapping currently available in the county is not sufficient to accurately determine the number of acres that might be affected, although the benefitted cropland would generally be downstream of proposed storage facilities (see Section 4).

3.2.2 Costs

Expenditures for flood protection are usually justified by comparing the expected benefits to the cost of improvements, and benefits should exceed cost in order to justify improvements. The cost of flood protection is proportional to the level of protection provided. That is, it costs more to provide a greater level of protection. And, the level of protection is usually stated as a return period, which relates to the frequency that a storm may be expected to occur.

In Section 2, hydrologic data on peak discharges and flood volumes were developed in terms of return periods (i.e., two-, five-, 10-, 25-, 50-, and 100-year). The two-year event reoccurs every other year, on the average, whereas the much larger 100-year event usually occurs only once in 100 years. Therefore, a flood protection plan for the two-year event would be far less costly than one for the 100-year event, but would only provide protection for the two-year events, and thus would not provide very large benefits.

Flood control structures are designed for a particular frequency depending upon the level of protection desired. But in addition to considering flood damages, safety and social issues such as inconvenience, loss of time, and quality of life must also be considered. For Martin County, it appears it is practical to attempt to reduce flood damages to a 10- to 50-year level. As will be seen in the following sections, this appears to be a realistically achievable level of protection. In Section 4, conceptual plans for a large structure on Sulphur Springs Draw and for various facilities in the modelled areas (Ackerly-Knott, Brown, Three League, and Valley View Drive) are developed and estimated costs are presented.

SECTION 4

SECTION 4
CONCEPTUAL FLOOD PROTECTION PLAN

4.1 GENERAL CONSIDERATIONS

Flood hydrology for Sulphur Springs Draw and three areas in the northeastern and north central part of the county was presented in Section 2. For the three modelled areas, the best flood protection approach would be to utilize and enhance existing storage to the maximum extent possible. This would be accomplished by constructing berms or low dams at the downstream ends of natural playas or other suitable sites to create detention basins to temporarily store excess floodwater. Each berm or dam would be provided with a small diameter outlet pipe that would gradually discharge stored water back into the drainage system at a rate that will not cause damage or exceed the capacity of existing ditches. The berms would be constructed with on-site material taken from the storage area. In some locations, only a small drain would need to be added to existing playas so the natural storage can be made available for the next storm. These systems will provide variable protection from a minimum of 10 years up to 50 years and even 100 years in a few locations.

A variation of this plan that could have economic and water conservation benefits is using the stored flood water to irrigate crops. This is viable where the storage is sufficient and water quality is acceptable. This possibility is explored in detail in Section 5.

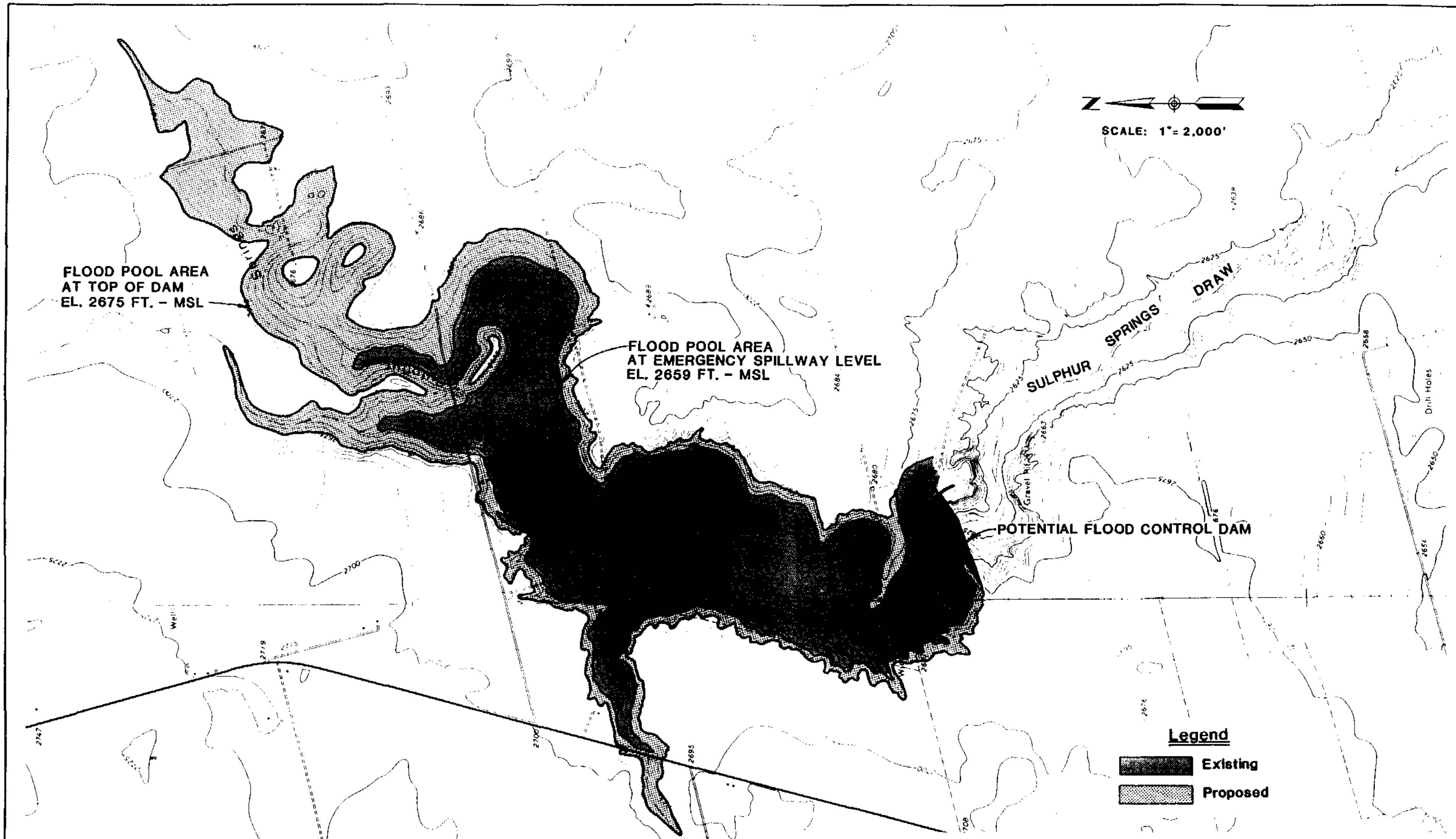
4.2 FLOOD CONTROL STRUCTURE ON SULPHUR SPRINGS DRAW

A potential flood control structure was evaluated on Sulphur Springs Draw southeast of the Three League area (Figure 6). The structure would consist of a flood control dam with a drop inlet type principal spillway and an earth/rock cut emergency spillway. Based on the topography of the site, the top of dam elevation would be approximately 2,675 feet-MSL. The principal spillway would retain a normal pool level of 2,630 feet-MSL. The emergency spillway would be approximately 1,000 feet in length at a crest elevation of 2,659 feet-MSL. The structure would have a flood control capacity between the principal spillway level and the emergency spillway level of 20,670 acre-feet. The total storage at the top of dam elevation would be approximately 42,472 acre-feet. The flood hydrographs summarized in Table 11 were routed through the proposed dam to determine the amount of flood flow reduction. As seen in the table, very little reduction is achieved for the 10-year flood event and even less reduction is achieved for the 25-year to 100-year flood events.

Because the justification for a flood control structure depends upon reduction of damages downstream, there appears to be little or no flood control benefit that can be derived from this structure.

A water surface profile model was developed for the stream downstream of the dam to the Martin County line using the U.S. Army Corps of Engineers HEC-2 Water Surface Profiles Program (HEC, 1982). The purpose of this model was to calculate flood levels with and without the dam to show how much flood plain would be removed for a particular flood. However, as the reductions were minimal, there is virtually no change in flood levels downstream, and therefore no benefit.

The only other possible benefits might be to the SH 846 and Romine crossings. However, both of these have been substantially improved since 1986 and would therefore not be benefitted by this structure.



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POTENTIAL FLOOD CONTROL DAM ON SULPHUR SPRINGS DRAW

MARTIN COUNTY FLOOD PROTECTION STUDY

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FIG. 6

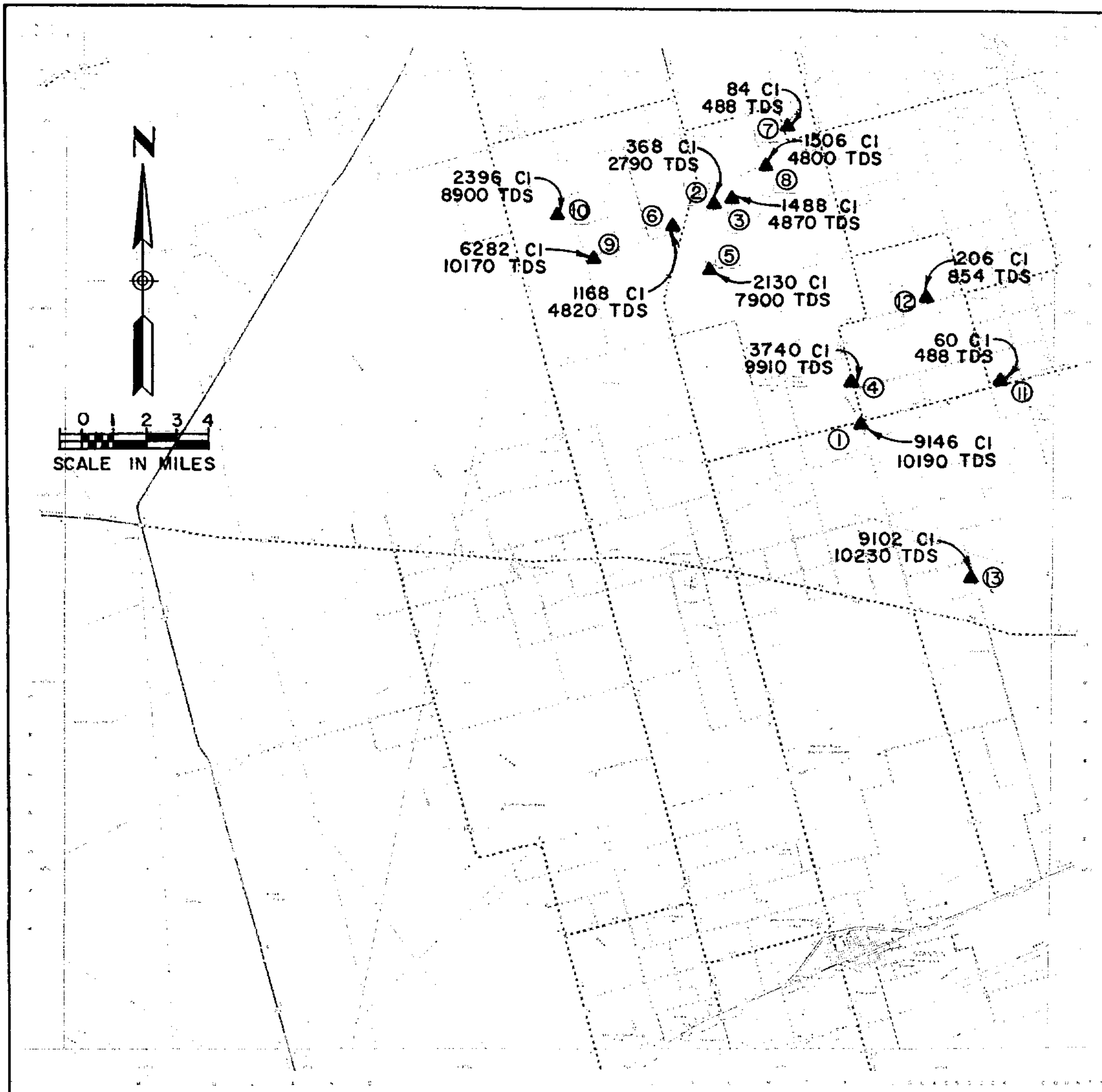
TABLE 11 SULPHUR SPRINGS DRAW POTENTIAL FLOOD CONTROL STRUCTURE SUMMARY OF RESULTS						
Flood Event	**Peak Inflow (cfs)**	**Runoff Volume (Ac-ft)**	**Peak Outflow (cfs)**	**Peak Stage (ft-MSL)**	**Peak Storage (Ac-ft)**	**Peak Reduction (%)**
10-Year	9,879	52,719	9,101	2661.4	24,833	8.0
25-Year	12,320	65,552	12,097	2661.8	25,458	2.0
50-Year	16,008	85,775	15,889	2662.4	26,175	1.0
100-Year	21,228	112,132	21,100	2663.1	27,067	0.5
PMF	168,725	1,082,337	168,494	2675.0	42,409	0.0
Reservoir Data:	Top of Dam Elevation = 2675.0 ft-MSL Principal Spillway Crest Elevation = 2630.0 ft-MSL Emergency Spillway Crest Elevation = 2659.3 ft-MSL Normal Pool Storage = 1446 Ac-ft Flood Storage = 20,668 Ac-ft					

A cost estimate for the dam was also made. Items considered in the estimate were the dam itself, the earth fill, excavation of emergency spillway, principal spillway, land acquisition, and engineering, environmental, and permitting costs. The estimated cost to design and construct this dam is $3.0 million. There may be some possibility that the structure could be used for water supply or irrigation purposes. To give serious consideration to evaluating this structure for raw water storage was beyond the basic scope of this study, although the development of storage-elevation data and the cost of the dam provides some useful data to support a more detailed study. Of primary concern for water supply would be the potential yield of the watershed and water quality.

Water samples taken from the draw were tested for total dissolved solids and chlorides, and it was found that water in the draw may be suitable as a raw water supply. The results of the water quality survey are shown in Figure 7. The samples were taken during dry weather conditions from base flow in the Draw and from playas in the county. There may, therefore, be little comparison between the quality of these samples and the quality of flood flows. There is no known data available on either the quantity or quality of Sulphur Springs Draw flood flows.

4.3 ACKERLY-KNOTT AREA PLAN

The proposed plan for the Ackerly-Knott area is shown in Figure 8. The plan is to enhance the storage capacity of existing playas and provide detention basins at other suitable sites. The storage volume can be increased by constructing small berms or low dams at low points in the basin which generally occur at road intersections or where drainage channels or swales cross the roads. The source of fill for the berms would be locally excavated materials from the basin. Each basin would have a 24-inch diameter outlet pipe connected to a short riser in the reservoir to slowly discharge the temporarily detained floodwater back into the ditch system following a storm.



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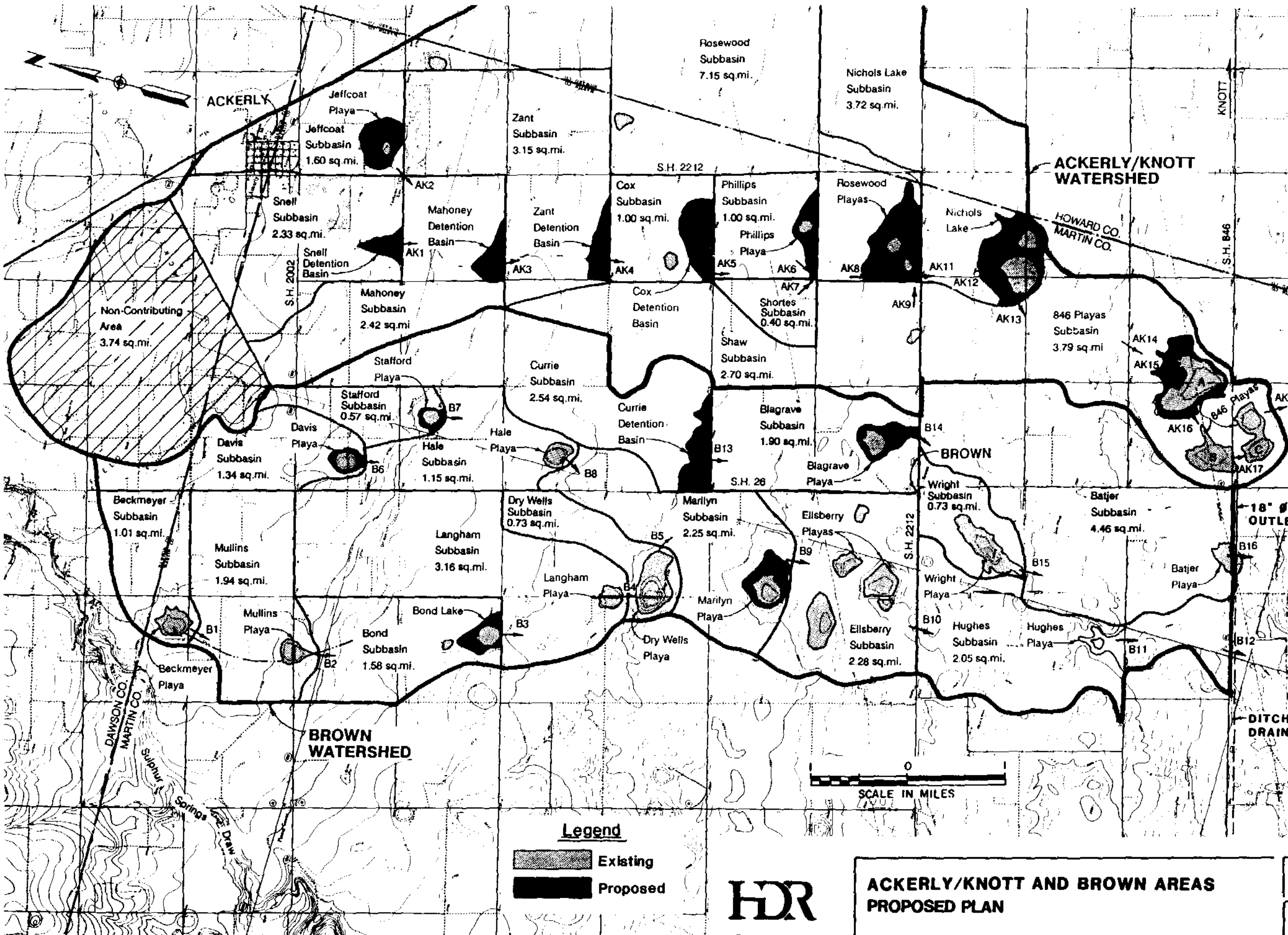
SULPHUR SPRINGS DRAW
WATER QUALITY SURVEY

MARTIN COUNTY FLOOD PROTECTION STUDY

JULY 1990

FIG. 7



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ACKERLY/KNOTT AND BROWN AREAS
PROPOSED PLAN

MARTIN COUNTY FLOOD PROTECTION STUDY

JULY 1990

FIG. 8

The entire system consists of nine detention basins or enhanced playas, the largest of which is the system of playas along SH 846 noted as 846 playas A, B, C, in Figure 8. Nichol's Lake is also quite large. The remaining playas or basins are much smaller but provide much needed flow reduction at road crossings immediately downstream. The estimated existing and proposed storage volumes and surface area of the proposed basins are compared in Table 12. Total temporary storage in the proposed system is increased from 1,219 acre-feet to 4,866 acre-feet, and the increase in surface area is approximately 909 acres. For basins which have existing playas, the outlet pipe would be placed above the normal high water level as determined by field observation. Following a storm, the basin contents would be evacuated down to the established existing high water level for the playa. For the basins that do not currently contain a playa, all of the temporarily detained water would be allowed to drain out.

TABLE 12
ACKERLY-KNOTT AREA
PROPOSED DETENTION BASINS

	Existing Conditions		Proposed Conditions	
Storage Location	Storage Volume (Ac-Ft)	Surface Area (Acres)	Storage Volume (Ac-Ft)	Surface Area (Acres)
Snell Detention Basin	0	0	68	41
Jeffcoat Playa	0	0	353	106
Mahoney Detention Basin	0	0	189	64
Zant Detention Basin	0	0	118	71
Cox Detention Basin	0	0	175	70
Phillip Playa	0	11	193	76
Rosewood Playa	0	21	433	220
Nichol's Lake	388	72	1145	174
846 Playa A	357	110	1539	281
846 Playa B	216	66	395	86
846 Playa C	258	69	258	69
Totals	1219	349	4866	1258

Because all of the basins would drain following a storm, the SH 846 playas would eventually receive all of the stormwater. However, there is no natural outlet for the 846 playas, so in order for these playas to drain back to normal high water, an outlet must be provided. Several alternatives were investigated, but the least expensive would be a 18-inch diameter outlet pipe from playa B draining west along the south right-of-way of SH 846 to a point where the pipe can discharge freely into a ditch channel. The ditch channel would be extended westerly from the pipe outlet to an existing channel that drains to Sulphur Springs Draw. The excavated material from the ditch channel would be used to construct a berm along the south edge of the ditch to prevent it from overflowing into the abutting fields.

The level of protection that this system provides was investigated using the HEC-1 model. In Table 13 the existing and proposed peak flows for two-, five-, 10-, 25-, 50-, and 100-year return periods are compared. Only key outflow points are given in Table 13 and locations are noted on Figure 8. This table shows that there are significant reductions in peak flows

TABLE 13
ACKERLY-KNOTT AREA FLOOD FLOWS
EXISTING AND PROPOSED CONDITIONS

		Two-Year Flood		Five-Year Flood		10-Year Flood		25-Year Flood		50-Year Flood		100-Year Flood	
Location	Drainage Area (Sq Mi)	Existing Peak Flow (CFS)	Proposed Peak Flow (CFS)	Existing Peak Flow (CFS)	Proposed Peak Flow (CFS)	Existing Peak Flow (CFS)	Proposed Peak Flow (CFS)	Existing Peak Flow (CFS)	Proposed Peak Flow (CFS)	Existing Peak Flow (CFS)	Proposed Peak Flow (CFS)	Existing Peak Flow (CFS)	Proposed Peak Flow (CFS)
Snell Outflow (AK1)	2.33	340	24	1006	245	1520	956	2077	1699	2625	2565	3152	2991
Jeffcoat Outflow (AK2)	1.60	227	12	669	23	1000	28	1360	32	1708	36	2035	40
Mahoney Outflow (AK3)	10.09	867	34	2674	90	3992	281	5414	596	6799	1169	8072	1914
Zant Outflow (AK4)	13.24	1209	30	3772	142	5569	444	7511	948	9605	1750	11632	2775
Cox Outflow (AK5)	14.24	1271	26	3902	56	5987	387	8214	850	10342	1590	12304	2616
Phillips Outflow (AK6)	1.00	171	7	483	17	709	21	958	24	1205	27	1436	30
Shortes Outflow (AK7)	0.45	87	87	249	249	373	373	504	504	624	624	752	752
Phillips/Shortes Outflow (AK8)	15.69	1327	87	4271	249	6352	421	8871	905	11283	1658	13565	2700
Shaw Outflow (AK9)	2.70	275	275	867	867	1326	1326	1819	1819	2297	2297	2756	2756
Rosewood Outflow (AK10)	7.15	526	54	1784	175	2697	260	3752	705	4712	1346	5663	2148
Rosewood/Shaw Outflow (AK11)	25.54	1946	317	6182	1036	9509	1574	13366	2160	16950	3342	20476	5405
Nichols Lake Inflow (AK12)	29.26	2183	625	7047	2013	10806	3089	15111	4286	19307	5466	23426	6603
Nichols Lake Outflow (AK13)	29.26	1848	50	6347	164	10142	589	14181	1572	18309	2813	22381	4718
County Road Crossing (AK14)	31.17	1894	287	6464	910	10333	1334	14536	1801	18660	2956	22994	4881
846 Playa A Inflow (AK15)	32.27	1929	440	6480	1397	10371	2054	14693	2850	18742	3600	23211	4968
846 Playa A Outflow (AK16)	32.27	1351	15	4883	75	8237	167	11997	365	15671	1292	19796	2346
846 Playa B Outflow (AK17)	32.58	1323	3	4797	24	8097	165	11829	361	15452	1279	19574	2318
846 Playa C Outflow (AK18)	33.05	1091	11	3907	42	6761	162	9938	350	13109	1218	16643	2234

for all outflow locations for all return periods up to 10 years and beyond. For many of the outflow points, the 25-year peak flow is reduced to less than the two-year existing peak outflow. In a few cases, even the 50-year peak flow is reduced to the two-year level. Significant reductions are also noted for the 100-year level, which in most cases is less than the five-year existing peak.

Because of the distribution of basins included in this plan, the level of protection is variable. In all cases, the protection level will exceed 10 years. Judging from the 100-year peak flow reductions, if this system were constructed, the area would rarely experience damages in excess of what would presently be caused by a five-year flood event.

For full benefits, all of the basins must be constructed. However, if one of the basins is not constructed, the next downstream basin could be increased in size to make up for the unavailable storage volume. This would not prevent the road immediately downstream of the unconstructed basin from being flooded, but it would maintain the overall level of protection.

An alternative was investigated to determine if excavating the basins to reduce surface area required for temporary storage was a viable alternative. The intent would be to excavate the lower portion of the basin and build up the perimeter with a terrace to reclaim (i.e., not flood) some of the land that would normally be periodically flooded.

A test case was examined to determine the excavation volume and area savings that could reasonably be accomplished. For the test in which the proposed basin storage volume was 190 acre-feet, approximately 40 acre-feet (64,500 CY) of earth could be moved out of the bottom of the basin to reduce the total surface area required from 64 to 40 acres. At $1.00 per cubic yard excavation cost, the total cost of the excavation would be $64,500, which removes 24 acres from the basin. The net benefit is only $9,600 if the land is valued at $400 per acre. Therefore, at these excavation costs, this procedure would not be cost effective.

Furthermore, it should be clarified that the basins would only temporarily detain water, and there would be very few years, perhaps one in five, in which a significant percentage (more than 50 percent) of the total volume of the basin would be utilized. Most years would require less than 10 percent of the storage; and in many years, the flood event would not occur during the growing season. Therefore, the area that would have been "reclaimed" in the above example would potentially experience a serious crop loss only once in 10 years or less.

A cost estimate is provided in Table 14 for the proposed plan for the Ackerly-Knott area. The total construction cost is estimated to be $367,000. As shown at the end of the table, $91,000 is included for the purchase of flood easements for the total intermittently flooded acreage of 909 acres for the proposed basins in Ackerly-Knott area. The total project cost is estimated to be $458,000.

4.4 BROWN AREA PLAN

The proposed plan for the Brown area, which was also shown in Figure 8, is very similar to the Ackerly-Knott area plan. The area and storage volume of basins to be upgraded are given in Table 15, and the level of protection provided at key outlet locations can be found in Table 16. Because the existing playas in the Brown area are well distributed and have more natural storage than those in the Ackerly-Knott area, the only modification proposed for many of the playas is to provide a positive outlet in the form of a small channel to drain the playa down to the existing normal high water level. Thus, the storage will become available for the next storm event.

TABLE 14
ACKERLY-KNOTT AREA PROPOSED PLAN
COST ESTIMATE

Snell Detention Basin

Item	Quantity	Units	Unit Cost	Total
Playa Dam (8' high)[3]	6,520	[1]CY	$2.00	$13,040
Pipe Outlet (24")	34	[2]FT	$20.00	680
Subtotal A				13,720
Miscellaneous (10%)				1,372
Subtotal B				15,092
Contingencies (15%)				2,264
Total Construction Cost				$17,356

Jeffcoat Playa Expansion

Item	Quantity	Units	Unit Cost	Total
Playa Dam (13' high)	9,260	CY	$2.00	$18,520
Pipe Outlet (24")	63	FT	$20.00	1,260
Subtotal A				19,780
Miscellaneous (10%)				1,978
Subtotal B				21,758
Contingencies (15%)				3,264
Total Construction Cost				$25,022

Mahoney Detention Basin

Item	Quantity	Units	Unit Cost	Total
Playa Dam (12' high)	15,300	CY	$2.00	30,600
Pipe Outlet (24")	70	FT	$20.00	1,400
Subtotal A				32,000
Miscellaneous (10%)				3,200
Subtotal B				35,200
Contingencies (15%)				5,280
Total Construction Cost				$40,480

Table 14 - Continued

Zant Detention Basin

Item	Quantity	Units	Unit Cost	Total
Playa Dam (8' high)	11,000	CY	$2.00	$22,000
Pipe Outlet (24")	40	FT	$20.00	800
Subtotal A				22,800
Miscellaneous (10%)				2,280
Subtotal B				25,080
Contingencies (15%)				3,762
Total Construction Cost				$28,842

Cox Detention Basin

Item	Quantity	Units	Unit Cost	Total
Playa Dam (8' high)	14,670	CY	$2.00	$29,340
Pipe Outlet (24")	58	FT	$20.00	1,160
Subtotal A				30,500
Miscellaneous (10%)				3,050
Subtotal B				33,550
Contingencies (15%)				5,033
Total Construction Cost				$38,583

Phillips Playa Expansion

Item	Quantity	Units	Unit Cost	Total
Playa Dam (8' high)	8,101	CY	$2.00	$16,202
Pipe Outlet (24")	40	FT	$20.00	800
Subtotal A				17,002
Miscellaneous (10%)				1,700
Subtotal B				18,702
Contingencies (15%)				2,805
Total Construction Cost				$21,508

Rosewood Playa Expansion

Item	Quantity	Units	Unit Cost	Total
Playa Dam (9' high)	26,240	CY	$2.00	$52,480
Pipe Outlet (24")	70	FT	$20.00	1,400
Subtotal A				53,880
Miscellaneous (10%)				5,388
Subtotal B				59,268
Contingencies (15%)				8,890
Total Construction Cost				$68,158

Table 14 - Continued

Nichol's Lake Expansion				
Item	Quantity	Units	Unit Cost	Total
Playa Dam (9' high)	13,362	CY	$2.00	$26,724
Pipe Outlet (24")	55	FT	$20.00	1,100
Subtotal A				27,824
Miscellaneous (10%)				2,782
Subtotal B				30,606
Contingencies (15%)				4,591
Total Construction Cost				$35,197
846 Playa A Expansion				
Item	Quantity	Units	Unit Cost	Total
Playa Dam (9' high)	2,300	CY	$2.00	$4,600
Pipe Outlet (24")	55	FT	$20.00	1,100
Subtotal A				5,700
Miscellaneous (10%)				570
Subtotal B				6,270
Contingencies (15%)				941
Total Construction Cost				$7,211
846 Playa B Outlet				
Item	Quantity	Units	Unit Cost	Total
Ditch Expansion	3,000	CY	$2.00	$6,000
Outlet Pipe (18")	2,700	FT	$20.00	54,000
Inlet Structure	1	LS	$7,000	7,000
Subtotal A				67,000
Miscellaneous (10%)				6,700
Subtotal B				73,700
Contingencies (15%)				11,055
Total Construction Cost				$84,755
Total Estimated Construction Cost - Ackerly-Knott Area Alternatives				$367,000
Total Easements 909 acres				$91,000
Total Cost				$458,000

Notes:

1. Cubic Yards
2. Feet
3. Height listed is maximum height.

The total estimated construction cost (Table 17) of the improvements is $272,000, and a $35,000 allowance is included for the purchase of 351 acres of flood easements. Thus, the estimated total cost is $307,000.

TABLE 15
BROWN AREA
PROPOSED PLAYA MODIFICATIONS

	Existing Conditions		Proposed Conditions	
Storage Location	Storage Volume (Ac-Ft)	Surface Area (Acres)	Storage Volume (Ac-Ft)	Surface Area (Acres)
Bechmeyer Playa	154	43	154	43
Mullins Playa	111	29	124	30
Bond Lake	0	22	205	87
Langham Playa	114	28	114	28
Dry Wells Playa	526	96	526	96
Davis Playa	68	20	208	37
Stafford Playa	0	13	84	21
Hale Playa	0	14	114	33
Marilyn Playa	122	38	410	117
Blagrave Playa	76	27	184	51
Wright Playa	322	88	322	88
Ellsberry Playa	160	64	160	64
Hughes Playa	0	40	181	58
Currie Detention Basin	0	0	227	84
Batger Playa	19	23	19	23
Totals	1672	509	3032	860

4.5 THREE LEAGUE AREA PLAN

The proposed plan for the Three League area is shown in Figure 9. It differs from the previous plans in that the existing playas in this area are quite large and offer considerable opportunity for storage. Therefore, there are fewer and larger basins proposed for this area, and several roads must be raised or relocated.

Tables 18, 19, and 20 summarize the basin areas and volumes, level of protection, and costs, respectively. The total cost is estimated to be $399,000, including $27,000 for flood easements on 272 acres that would be intermittently flooded as a result of the construction.

TABLE 16
BROWN AREA FLOOD FLOWS
EXISTING AND PROPOSED CONDITIONS

Location	Drainage Area (Sq Mi)	Two-Year Flood Existing Peak Flow (CFS)	Two-Year Flood Proposed Peak Flow (CFS)	Five-Year Flood Existing Peak Flow (CFS)	Five-Year Flood Proposed Peak Flow (CFS)	10-Year Flood Existing Peak Flow (CFS)	10-Year Flood Proposed Peak Flow (CFS)	25-Year Flood Existing Peak Flow (CFS)	25-Year Flood Proposed Peak Flow (CFS)	50-Year Flood Existing Peak Flow (CFS)	50-Year Flood Proposed Peak Flow (CFS)	100-Year Flood Existing Peak Flow (CFS)	100-Year Flood Proposed Peak Flow (CFS)
Beckmeyer Outflow (B1)	1.01	55	9	198	19	321	23	464	27	601	30	748	43
Mullins Outflow (B2)	2.95	172	27	587	91	935	155	1321	255	1686	572	2081	944
Bond Lake Outflow (B3)	4.53	202	12	703	22	1173	139	1700	254	2217	465	2792	902
Langham Outflow (B4)	7.69	336	25	1091	201	1785	518	2538	779	3286	1053	4123	1924
Dry Wells Outflow (B5)	8.42	0	0	62	46	541	109	1231	386	2161	875	3234	1671
Davis Outflow (B6)	1.34	74	12	217	23	334	28	456	32	576	117	705	252
Stafford Outflow (B7)	0.57	46	8	146	17	224	22	309	26	388	29	471	32
Hale Outflow (B8)	3.06	153	17	464	28	733	51	1003	119	1269	234	1564	447
Marilyn Outflow (B9)	13.73	211	10	640	20	1031	25	1890	545	3285	1208	4926	2168
Ellsberry Outflow (B10)	16.01	273	8	866	17	1446	21	2053	31	3543	962	5354	1950
Hughes Outflow (B11)	18.06	331	20	1086	34	1844	36	2617	145	3892	970	5900	1976
SH 846 Outflow (B12)	18.53	338	46	1116	134	1892	200	2673	273	3932	986	5955	2004
Currie Outflow (B13)	2.54	108	23	296	28	454	32	607	135	768	308	949	515
Blagrave Outflow (B14)	4.44	172	25	490	35	771	38	1052	183	1343	420	1670	684
Wright Outflow (B15)	0.73	43	4	154	11	254	15	368	18	479	20	596	23
Batjer Outflow (B16)	9.63	316	290	987	850	1531	1289	2123	1771	2686	2219	3366	2700

TABLE 17
BROWN AREA PROPOSED PLAN
COST ESTIMATE

Beckmeyer Playa Modification

Item	Quantity	Units	Unit Cost	Total
Channel Excavation	9,200	[1]CY	$2.00	$18,400
Pipe Outlet (24")	100	[2]FT	$20.00	2,000
Subtotal A				20,400
Miscellaneous (10%)				2,040
Subtotal B				22,440
Contingencies (15%)				3,366
Total Construction Cost				$25,806

Mullins Playa Modification

Item	Quantity	Units	Unit Cost	Total
Channel Excavation	4,200	CY	$2.00	$8,400
Pipe Outlet (24")	100	FT	$20.00	2,000
Subtotal A				10,400
Miscellaneous (10%)				1,040
Subtotal B				11,440
Contingencies (15%)				1,716
Total Construction Cost				$13,156

Bond Lake Expansion

Item	Quantity	Units	Unit Cost	Total
Playa Dam (6' high)[3]	10,000	CY	$2.00	$20,000
Pipe Outlet (24")	100	FT	$20.00	2,000
Subtotal A				22.000
Miscellaneous (10%)				2,200
Subtotal B				24,200
Contingencies (15%)				3,630
Total Construction Cost				$27,830

Table 17 - Continued

Langham Playa Modification

Item	Quantity	Units	Unit Cost	Total
Channel Excavation	1,400	CY	$2.00	$2,800
Pipe Outlet (24")	50	FT	$20.00	1,000
Subtotal A				3,800
Miscellaneous (10%)				380
Subtotal B				4,180
Contingencies (15%)				627
Total Construction Cost				$4,807

Dry Wells Playa Modification

Item	Quantity	Units	Unit Cost	Total
Channel Excavation	3,900	CY	$2.00	$7,800
Pipe Outlet (24")	100	FT	$20.00	2,000
Subtotal A				9,800
Miscellaneous (10%)				980
Subtotal B				10,780
Contingencies (15%)				1,617
Total Construction Cost				$12,397

Davis Playa Expansion

Item	Quantity	Units	Unit Cost	Total
Playa Dam (6' high)	3,700	CY	$2.00	$7,400
Pipe Outlet (24")	60	FT	$20.00	$1,200
Subtotal A				$8,600
Miscellaneous (10%)				$860
Subtotal B				$9,460
Contingencies (15%)				$1,419
Total Construction Cost				$10,879

Stafford Playa Expansion

Item	Quantity	Units	Unit Cost	Total
Playa Dam (10' high)	17,600	CY	$2.00	$35,200
Pipe Outlet (24")	100	FT	$20.00	2,000
Subtotal A				37,200
Miscellaneous (10%)				3,720
Subtotal B				40,920
Contingencies (15%)				6,138
Total Construction Cost				$47,058

Table 17 - Continued

Hale Playa Expansion

Item	Quantity	Units	Unit Cost	Total
Playa Dam (7' high)	3,200	CY	$2.00	$6,400
Pipe Outlet (24")	75	FT	$20.00	1,500
Subtotal A				7,900
Miscellaneous (10%)				790
Subtotal B				8,690
Contingencies (15%)				1,304
Total Construction Cost				$9,994

Marilyn Playa Expansion

Item	Quantity	Units	Unit Cost	Total
Playa Dam (7' high)	6,400	CY	$2.00	$12,800
Pipe Outlet (24")	60	FT	$20.00	1,200
Subtotal A				14,000
Miscellaneous (10%)				1,400
Subtotal B				15,400
Contingencies (15%)				2,310
Total Construction Cost				$17,710

Ellsberry Playa Modification

Item	Quantity	Units	Unit Cost	Total
Channel Excavation	5,600	CY	$2.00	$11,200
Outlet Pipe (24")	100	FT	$20.00	2,000
Inlet Structure	1	LS	$7,000	7,000
Subtotal A				20,200
Miscellaneous (10%)				2,020
Subtotal B				22,220
Contingencies (15%)				3,333
Total Construction Cost				$25,553

Hughes Playa Modification

Item	Quantity	Units	Unit Cost	Total
Playa Dam (10' high)	20,800	CY	$2.00	$11,200
Outlet Pipe (24")	100	FT	$20.00	2,000
Inlet Structure	1	LS	$7,000	7,000
Subtotal A				20,200
Miscellaneous (10%)				2,020
Subtotal B				22,220
Contingencies (15%)				3,333
Total Construction Cost				$25,553

Table 17 - Continued

Currie Detention Basin

Item	Quantity	Units	Unit Cost	Total
Detention Basin Dam	24,600	CY	$2.00	$11,200
Outlet Pipe (24")	100	FT	$20.00	2,000
Inlet Structure	1	LS	$7,000	7,000
Subtotal A				20,200
Miscellaneous (10%)				2,020
Subtotal B				22,220
Contingencies (15%)				3,333
Total Construction Cost				$25,553

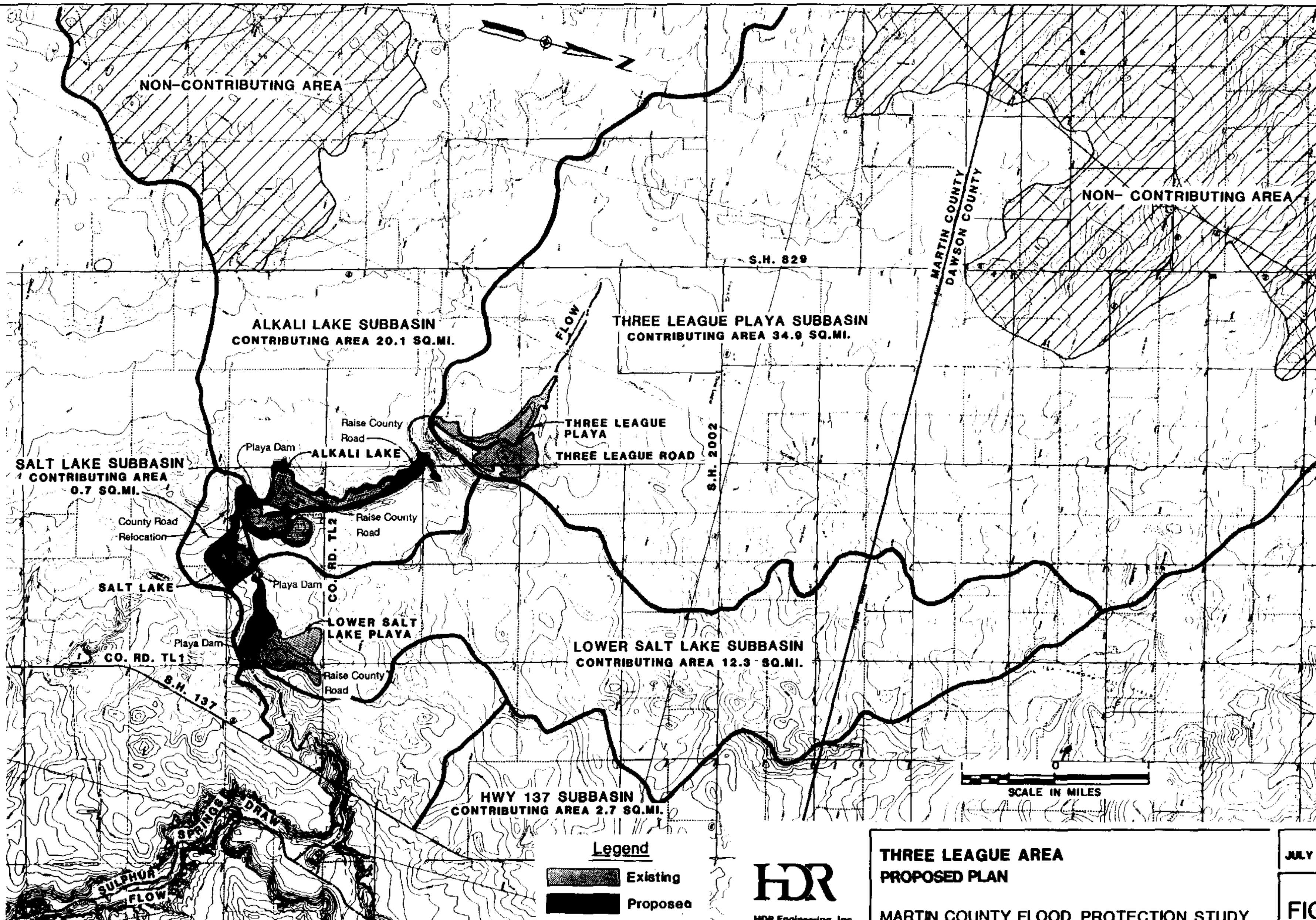
Wright Playa Modification

Item	Quantity	Units	Unit Cost	Total
Channel Excavation	1,600	CY	$2.00	$11,200
Outlet Pipe (24")	100	FT	$20.00	2,000
Inlet Structure	1	LS	$7,000	7,000
Subtotal A				20,200
Miscellaneous (10%)				2,020
Subtotal B				22,220
Contingencies (15%)				3,333
Total Construction Cost				$25,553

Total Estimated Construction Cost - Brown Area Alternatives	$272,000
Total Drainage Easement 351 acres	$35,000
Total Cost	$307,000

Notes:

1. Cubic Yards
2. Feet
3. Height listed is maximum height.



HDR
HDR Engineering, Inc.

THREE LEAGUE AREA
PROPOSED PLAN

MARTIN COUNTY FLOOD PROTECTION STUDY

JULY 1990

FIG. 9

TABLE 18 THREE LEAGUE AREA PROPOSED DETENTION PONDS				
	Existing Conditions		Proposed Conditions	
Storage Location	Volume (Ac-Ft)	Surface Area (Acres)	Volume (Ac-Ft)	Surface Area (Acres)
Alkali Lake	1182	199	2519	343
Salt Lake	168	24	350	50
Lower Salt Lake Playa	880	153	1223	255
Totals	2230	376	4092	648

4.6 THREE LEAGUE GIN COMMUNITY

A plan to divert flood flows was developed for the Three League Community as shown in Figure 10. The plan consists of a flood channel to divert flood flows west and south around the SH 2002 intersection, across SH 2002, and then into the general drainage swale southwesterly from SH 2002. The channel dimensions required to pass the 10-year frequency flood of 900 cfs are: Bottom Width = 17 feet; Depth = 5 feet; Side Slope = 2H:1V; and Top Width = 37 feet. Other variations could be used. A large number of culverts would be required to pass the flow under SH 2002 because of the shallow drainage outlet available. It is estimated that five 36-inch diameter pipes would be required to pass the two-year discharge of 260 cfs, and 17 36-inch diameter pipes would be required to pass the 10-year flow. The estimated construction cost is presented in Table 21. The estimated cost to obtain 1.5 acres of drainage easement is $600.

TABLE 21 THREE LEAGUE GIN COMMUNITY PROPOSED PLAN COST ESTIMATE				
Item	Length (FT)	Volume (CY)	Unit Cost ($/CY)	Total
Excavation	1,200	6,400	$2.00	$12,800
Culvert (36" CMP)	1,700	N/A	$30.00	$51,000
Total				$63,800
Contingencies (15%)				$9,600
Total Construction Cost				$73,400

4.7 VALLEY VIEW ROAD

As stated in Section 2, the Valley View Road right-of-way is essentially a flood channel whenever significant runoff occurs. Unlike the previous areas, the contributing basin does not have suitable locations for detention basins. Therefore, a plan including basins was not developed. Instead, the expected peak flows were calculated at key intersections (Table 22) and the channel requirements and costs (Table 23) to discharge the 10-year peak design flow were determined for the five reaches shown in Figure 5.

TABLE 19
THREE LEAGUE AREA FLOOD FLOWS
EXISTING AND PROPOSED CONDITIONS

Location	Drainage Area (Sq Mi)	Two-Year Flood Existing Peak Flow (CFS)	Two-Year Flood Proposed Peak Flow (CFS)	Five-Year Flood Existing Peak Flow (CFS)	Five-Year Flood Proposed Peak Flow (CFS)	10-Year Flood Existing Peak Flow (CFS)	10-Year Flood Proposed Peak Flow (CFS)	25-Year Flood Existing Peak Flow (CFS)	25-Year Flood Proposed Peak Flow (CFS)	50-Year Flood Existing Peak Flow (CFS)	50-Year Flood Proposed Peak Flow (CFS)	100-Year Flood Existing Peak Flow (CFS)	100-Year Flood Proposed Peak Flow (CFS)
Alkali Lake Inflow	53.53	1035	1035	3260	3260	6080	6080	10254	10254	14826	14826	19794	19794
Alkali Lake Outflow	53.53	0	0	1739	121	4813	1405	8039	3688	12024	6412	16651	10159
Salt Lake Inflow	55.72	82	82	1754	219	4841	1416	8094	3712	12095	6462	17318	10218
Salt Lake Outflow	55.72	68	68	1567	99	4469	1268	8094	3519	12069	6234	17289	9879
Lower Salt Lake Inflow	67.99	N/A	150	N/A	385	N/A	1295	N/A	3641	N/A	6472	N/A	10252
Lower Salt Lake Outflow	67.99	N/A	48	N/A	59	N/A	87	N/Q	2015	N/A	4390	N/A	7236
Oil Well Rd TL1	67.99	48	48	1575	59	4486	87	8143	2015	12121	4390	17371	7236
County Road TL2	70.66	177	147	1633	438	4619	671	8456	2053	12580	4503	18064	7416

TABLE 20
THREE LEAGUE AREA PROPOSED PLAN - COST ESTIMATE

Alkali Lake Expansion

Item	Quantity	Units	Unit Cost	Total
Playa Dam (10' high)[3]	6,370	CY[1]	$2.00	$12,741
Raise County Rd@U/S End	5,769	CY	$5.00	28,843
Raise Co Rd Intersec.	7,778	CY	$5.00	38,889
Raise Co Rd W of Alkali Lake	2,722	CY	$5.00	13,611
Culverts - 36" CMP	680	FT[2]	$30.00	20,400
Subtotal A				114,484
Miscellaneous (10%)				11,448
Subtotal B				125,932
Contingencies (15%)				18,890
Total Construction Cost				$144,822

Salt Lake Expansion

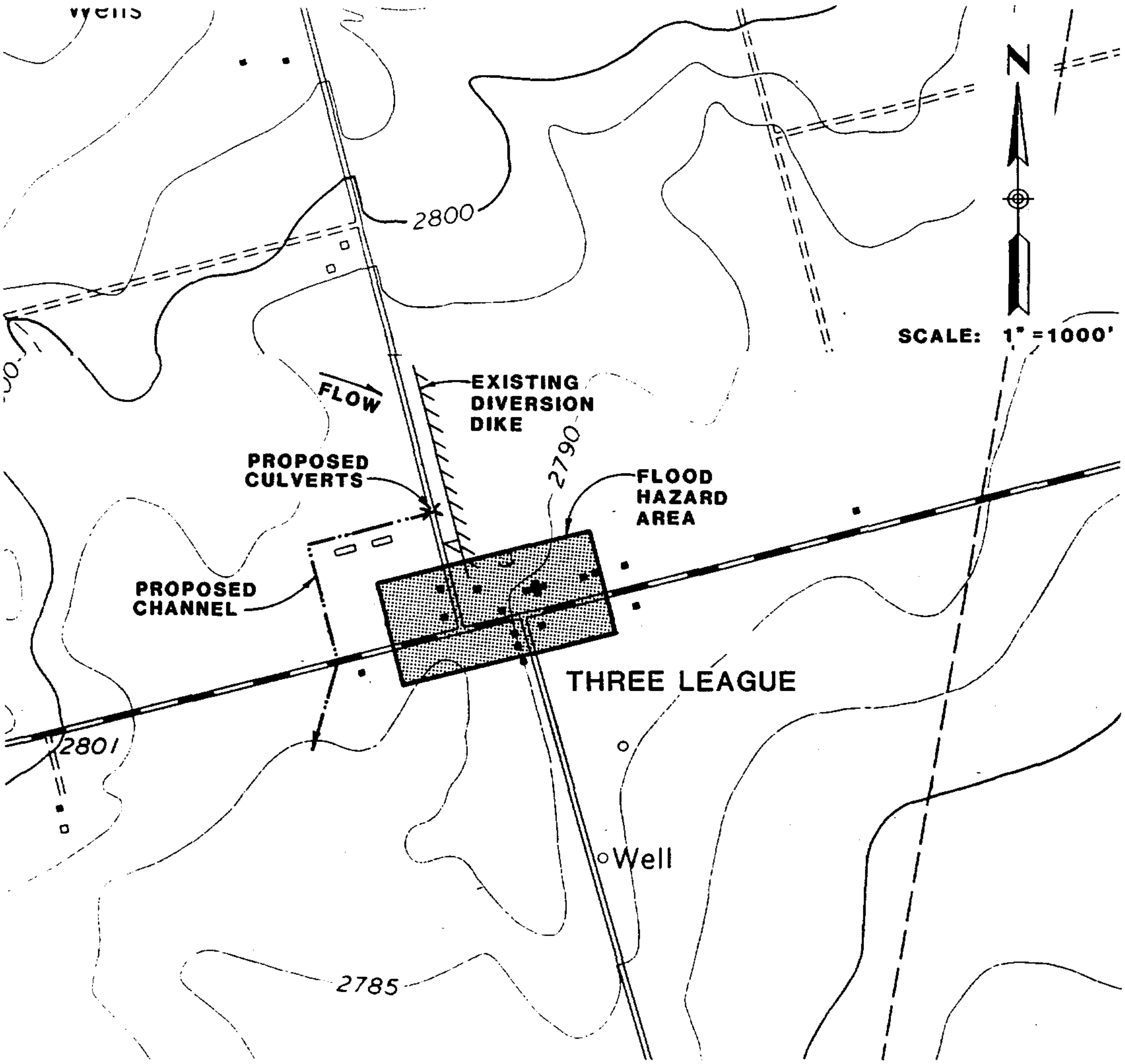
Item	Quantity	Units	Unit Cost	Total
Playa Dam (10' high)	6,181	CY	$2.00	$12,361
Relocate Co Rd@ So.Edge	6,667	CY	$5.00	33,333
Co Rd ROW	3	AC	$400.00	1,377
Culverts - 36" CMP	150	FT	$30.00	4,500
Subtotal A				51,571
Miscellaneous (10%)				5,157
Subtotal B				56,728
Contingencies (15%)				8,509
Total Construction Cost				$65,237

Lower Salt Lake Expansion

Item	Quantity	Units	Unit Cost	Total
Playa Dam (13' high)	9,567	CY	$2.00	$19,133
Raise Co Rd D/S of Dam	18,333	CY	$5.00	91,667
Channel Excavation	4,822	CY	$2.00	9,664
Culverts - 36" CMP	250	FT	$30.00	7,500
Subtotal A				127,964
Miscellaneous (10%)				12,796
Subtotal B				140,760
Contingencies (15%)				21,114
Total Construction Cost				$161,874

Total Estimated Construction Cost - Three League Area Alternatives	$372,000
Total Drainage Easement 272 acres	$27,000
Total Cost	$399,000

Notes: 1.Cubic Yards; 2.Feet; 3.Height listed is maximum height.



HDR Engineering, Inc.

PROPOSED CHANNEL NEAR THREE LEAGUE GIN

MARTIN COUNTY FLOOD PROTECTION STUDY

JULY 1990

FIG. 10

The costs in Table 23 assume that Valley View Road does not now have a channel, which is not the case in reality, because for much of the length of the road, the ditch has been improved since 1986. The estimate also does not include the cost of structures such as intersection and slope paving. This is assumed to already have been done. The conceptual plan is presented here for reference if further improvements are contemplated.

TABLE 22
VALLEY VIEW ROAD
PEAK FLOW SUMMARY

Location	Drainage Area (Sq Mi)	2-Year Peak Flow (CFS)	5-Year Peak Flow (CFS)	10-Year Peak Flow (CFS)	25-Year Peak Flow (CFS)	50-Year Peak Flow (CFS)	100-Year Peak Flow (CFS)
VVI	0.51	84	240	356	482	602	727
VV2	1.30	189	541	803	1092	1372	1650
VV3	2.36	261	743	1099	1497	1886	2263
VV4	3.42	313	889	1317	1788	2252	2701
VV5	4.50	360	1016	1504	2043	2568	3086
VV6	5.33	423	1196	1773	2405	3021	3630

TABLE 23
VALLEY VIEW ROAD
COST ESTIMATE

Channel Reach	Channel Depth (Ft)	Bottom Width (Ft)	Side Slope (H:V)	Channel Slope (%)	Excavation Volume (CY)	Unit Cost ($/CY)	Channel Cost ($)
1	5	4	1:1	1.1	8,800	$2.00	$17,600
2	5	12	1:1	0.8	16,622	$2.00	$33,244
3	5	18	1:1	0.7	22,489	$2.00	$44,978
4	5	25	1:1	0.5	29,333	$2.00	$58,667
5	5	28	1:1	0.5	32,267	$2.00	$64,533
Total Cost							$219,000

4.8 SUMMARY

A conceptual flood protection plan was presented for the Ackerly-Knott, Brown, Three League, Three League Gin, and Valley View Road areas in Martin County. The proposed facilities are small floodwater retarding dams constructed across the outlet of existing playas and other suitable locations. Each dam would be constructed with a 24-inch diameter outlet pipe which would slowly drain the playa or detention basin following a runoff event.

The cost of easements, the estimated construction cost, and the total project cost of the proposed facilities is summarized as follows:

Area	Construction Cost	Easements	Total Cost
Ackerly-Knott	$367,000	$91,000	$458,000
Brown	272,000	35,000	307,000
Three League	372,000	27,000	399,000
Three League Gin	73,400	600	74,000
Valley View Road	219,000	N/A	219,000
Totals	$1,303,400	$153,600	$1,457,000

The structures provide significant floodwater retarding benefits. The average level of protection is to approximately the 25-year event, although significant reductions in peak flow occur for the 50-year return period event for many of the proposed structures. A few structures also show significant floodwater retarding effect for the 100-year event in that peak discharges are reduced to less than peak discharge for the five-year event. The economical justification of these proposed plans is discussed in Section 6.

The feasibility of a flood control dam on Sulphur Springs Draw was also investigated. A suitable site was found on the draw and it was designed to make maximum use of the available storage. The estimated construction cost is $3,000,000. The structure was found to provide only minimal reductions in peak flood flows for the 10-, 50-, 100-year, and PMF design flows. It would therefore not measurably reduce flood damages on the reach below the draw. For these reasons, the structure is not justified for a strictly flood control purpose. Other purposes could be investigated, such as water supply and recreation, but these are beyond the scope of the present study.

SECTION 5

SECTION 5
IRRIGATION

5.1 IRRIGATION CONSIDERATIONS

In the areas in which additional flood storage is created, there is a possibility that there may be sufficient water supply of suitable quality to justify an irrigation system. This section considers the viability of this option with respect to the reliability and quality of the water supply and the potential net benefits.

5.2 WATER YIELD AND WATER SUPPLY RELIABILITY CONSIDERATIONS

In Section 2.2, the hydrologic yield model for the Ackerly-Knott area was introduced. Part of the purpose for developing this model was to evaluate the expected water yield in this basin which could be used for supplemental irrigation. Estimated annual water yields (i.e., runoff) for the 45-year simulation period were given in Table 1. The yields were given in terms of inches of runoff produced in a given year.

A re-examination of Table 1 reveals the following general conclusions about water supply reliability in Martin County:

1. Runoff production is highly variable. In half of the years, on the average, little or no runoff is expected in amounts that will be useful for irrigation.

2. In about one in five years, at least 0.5 inches of runoff is produced, which likely represents an abundant water supply for irrigation purposes if sufficient storage volume is available.

3. Examination of model output shows that significant runoff-producing storms occur most frequently in September and October, and 75 percent of runoff occurs in the non-growing season from September to May. If this water is to be utilized for irrigating cotton, it must either be stored until the growing season, or applied prior to planting to increase the soil moisture. If this water is kept in storage, some will inevitably be lost to evaporation and pond exfiltration; whereas, if it is put in the soil, there is limited storage of about four to six inches available in the soil profile.

These considerations limit the extent to which supplemental irrigation can be practiced. In effect, a large watershed is needed to reliably irrigate a reasonably-sized plot. For example purposes, the Ackerly-Knott area was modelled as follows:

- The entire area (20,642 acres) was considered to be the watershed for calculation of total runoff volumes;

- A simulated storage pond having a storage volume roughly equivalent to the total of all storage areas in the conceptual plan for the Ackerly-Knott area was used. At the time the model was run, this total storage volume was about 4,500 acre-feet, which is what was used in this example.

- The model calculates pond storage volumes and levels in response to daily runoff inputs, and evaporation and exfiltration losses for the entire 45-year period. From this, water availability for irrigation was calculated. The model output produces tabulations of volumes on a monthly and annual basis.

According to an article in The Cross Section (High Plains UWCD, 1990), cotton requires 10 to 12 inches of supplemental irrigation, on the average, to produce maximum yields. In this analysis, it was assumed that 16 inches total were required to produce maximum crop yield. This accounts for 25 percent losses in storage and delivery to the field. In 22 of the 45 years in the simulation period, a 160-acre field could have been fully irrigated using runoff from the 20,642 acre watershed. In addition, in four other years, at least half the water requirement would have been available. Therefore, this watershed could fully sustain a 160-acre plot in half the years.

In other words, roughly 130 acres of watershed are required to support the full irrigation of one acre of cotton in 50 percent of the years in Martin County. In half the years, there will be no runoff and therefore water will not be available. The years in which runoff occurs or does not occur appear to run in cycles of three to 10 years. The foregoing analysis includes and accounts for carry-over of water into a succeeding year or years when significant runoff is produced, as in 1986.

The preceding analysis is not intended to imply that a 160-acre plot is needed to actually sustain a supplemental irrigation enterprise. It only serves to show that water availability is intermittent and that utilizing the available resources to maximum benefit will take good planning and management. The question of whether an irrigation enterprise is viable in this area is considered in the next section.

5.3 IRRIGATION ECONOMICS

Since it is estimated that the lakes in which water would be captured and stored in Martin County would contain water in only five years out of 10, the installation of permanent pumping and conveyance facilities for each lake would not be justified. Thus, the use of trailer mounted, portable lake pumps and motors and movable lengths of agricultural PVC pipe represent the lowest capital investment for the county to move water from the lakes to the fields. It is further estimated that irrigation application to the fields would be through low capital, side-roll sprinkler irrigation methods. A complement of irrigation equipment for use in this type of water supply setting would be:

Item	Price
Trailer Model Pump (20' long, 6" discharge pipe, with trailer)	$3,550
Motor (8-cylinder, automobile type)	2,400
Agricultural PVC Pipe (six inch 50 psi, 5,280 feet) @ $94.60/100'X1.05	5,250
Gated Pipe (60 feet)	250
Pipe Trailer (2)	3,200
Freight (Factory to Farms) 3 loads @ $500	1,500
TOTAL	$16,150

It is estimated that this equipment would have a 15-year life, with no salvage value at the end of the 15-year period. Using straight line depreciation, an interest rate of 10 percent, and the estimate that the equipment could serve 150 acres, annual depreciation and investment cost per acre totals:

Annual Depreciation	$1,077
Interest on Investment	808
TOTAL	$1,885
Annual Cost per Acre	$12.57

It is estimated that a side-roll sprinkler system would have a 20-year life, with no salvage value at the end of the 20-year period. Using straight line depreciation, an interest rate of 10 percent, and the estimate that the equipment could serve 150 acres, annual depreciation and investment cost totals:

Side-roll Sprinkler Cost	$25,000
Annual Depreciation	$1,250
Interest on Investment @ 10%	1,250
TOTAL	$2,500
Annual cost per acre	$16.66

Annual depreciation and investment per acre for irrigation system to irrigate 150 acres is:

Pump, Motor, and Pipe	$12.57
Side Roll Sprinkler	$16.66
TOTAL	$29.23

For purposes of assessing the potential economic feasibility of using surface water impounded in lakes and catchment basins in the flood prone areas of Martin County, the estimated net returns to both dryland and irrigated cotton were calculated and are presented in Tables 24, 25, and 26. Under average conditions, there are net losses to irrigation of approximately $10 per acre. (Irrigation net returns of Table 25 minus dryland net returns of Table 24). Note that these estimates are net estimated costs of the irrigation equipment and sprinkler systems.

Under high fertility conditions (Table 26), net returns to irrigation are $230 per acre (irrigation net returns of Table 26 minus dryland net returns of Table 24). This level of returns depends upon cotton producers being able to achieve cotton yields of two bales per acre using high levels of nitrogen and phosphate fertilizers and careful coordination of water and fertilizer inputs, as is being demonstrated by research and in practice on cotton farms in Lubbock County.

TABLE 24
CROP: COTTON
DRYLAND (SANDY SOILS)
MARTIN COUNTY, TEXAS
AVERAGE CONDITIONS

Item	Quantity	Units	Price	Total
Income				
Cotton Lint	215.00	lbs.	0.51	$109.65
Cottonseed	0.17	tons	100.00	17.00
Deficiency Payment	215.00	lbs.	0.17	36.55
Total Income				**$163.20**
Variable Expenses				
Pre-Harvest				
Soil Test	1.0	acre	0.25	$ 0.25
Seed & Treatment	16.0	lbs.	0.78	12.48
Nitrogen & Appl.	-	-	-	-
Phosphate & Appl.	-	-	-	-
Insecticide & Appl.	1.0	acre	7.00	7.00
Herbicide	1.0	acre	4.00	4.00
Hoeing	1.0	acre	5.00	5.00
Fuel & Lube (Mech)	1.0	acre	12.00	12.00
Fuel & Lube (Irrig)	-	-	-	-
Repairs (Mech)	1.0	acre	3.00	3.00
Repairs (Irrig)	-	-	-	-
Labor (Mech)	3.0	hours	5.50	16.50
Labor (Irrig)	-	-	-	-
Crop Insurance	1.0	acre	8.00	8.00
Other	-	-	-	.-
Subtotal Pre-Harvest				$68.23
Harvest				
Defoliant & Appl.	-	-	-	-
Strip & Module	10.21	cwt.	1.75	17.86
Haul Module	0.45	bale	3.00	1.35
Gin	10.21	cwt.	1.65	16.85
Bagging & Ties	0.45	bale	14.50	6.53
Subtotal Harvest				42.59
Total Variable Costs				$110.82
Fixed Expenses				
Set aside land	0.222	acre	16.50	$3.66
Depr. (Mech & Eqpt)	1.0	acre	20.00	20.00
Depr. (Irrig & Eqpt)	-	-	-	.-
Subtotal Fixed Costs				$23.66
Interest on Operating Capital	68.00	do.	0.085	5.79
Total Costs				**$140.27**
Returns Land & Management				**$ 22.93**

TABLE 25
CROP: COTTON
SPRINKLER IRRIGATED (SANDY SOILS)
MARTIN COUNTY, TEXAS
AVERAGE CONDITIONS

Item	Quantity	Units	Price	Total
Income				
Cotton Lint	500.00	lbs.	0.51	$255.00
Cottonseed	0.40	tons	100.00	40.00
Deficiency Payment	500.00	lbs.	0.17	85.00
Total Income				**$380.00**
Variable Expenses				
Pre-Harvest				
Soil Test	1.0	acre	0.25	$ 0.25
Seed & Treatment	12.0	lbs.	0.80	9.60
Nitrogen & Appl.	50.0-	lbs	0.30	15.00
Phosphate & Appl.	30.0	lbs	0.30	9.00
Insecticide & Appl.	1.0	acre	10.00	0.00
Herbicide	1.0	acre	4.50	4.50
Hoeing	1.0	acre	10.00	10.00
Fuel & Lube (Mech)	1.0	acre	10.00	10.00
Fuel & Lube (Irrig)	1.0	acre	32.00	32.00
Repairs (Mech)	1.0	acre	3.75	3.75
Repairs (Irrig)	1.0	acre	8.75	8.75
Labor (Mech)	3.6	hours	5.50	19.80
Labor (Irrig)	2.0	hours	5.50	11.00
Crop Insurance	1.0	acre	11.00	11.00
Other	-	-	-	.-
Subtotal Pre-Harvest				$154.65
Harvest				
Defoliant & Appl.	-	-	-	-
Strip & Module	22.50	cwt.	1.75	$39.37
Haul Module	1.00	bale	3.00	3.00
Gin	22.50	cwt.	1.65	37.12
Bagging & Ties	1.00	bale	14.50	14.50
Subtotal Harvest				93.99
Total Variable Costs				$248.64
Fixed Expenses				
Set aside land	0.33	acre	16.50	$5.44
Depr. (Mech & Eqpt)	1.0	acre	40.00	40.00
Depr. (Irrig & Eqpt)	1.0	acre	30.00	60.00*
Subtotal Fixed Costs				$105.44
Interest on Operating Capital	155.00	do.	0.085	13.17
Total Costs				**$367.25**
Returns Land & Management				**$ 12.75**

*Takes into account that equipment is used only 50 percent of the time, since on the average the lakes contain water in 5 of 10 years.

TABLE 26
CROP: COTTON
SPRINKLER IRRIGATED (SANDY SOILS)
MARTIN COUNTY, TEXAS
HIGH FERTILIZER

Item	Quantity	Units	Price	Total
Income				
Cotton Lint	1,000.00	lbs.	0.51	$510.00
Cottonseed	0.80	tons	100.00	80.00
Deficiency Payment	500.00	lbs.	0.17	170.00
Total Income				**$760.00**
Variable Expenses				
Pre-Harvest				
Soil Test	1.0	acre	0.25	$ 0.25
Seed & Treatment	12.0	lbs.	0.80	9.60
Nitrogen & Appl.	120.0	lbs	0.30	36.00
Phosphate & Appl.	40.0	lbs	0.30	12.00
Insecticide & Appl.	2.0	acre	7.00	14.00
Herbicide	1.0	acre	4.50	4.50
Hoeing	1.0	acre	10.00	10.00
Fuel & Lube (Mech)	1.0	acre	15.00	15.00
Fuel & Lube (Irrig)	1.0	acre	32.00	32.00
Repairs (Mech)	1.0	acre	3.75	3.75
Repairs (Irrig)	1.0	acre	8.75	8.75
Labor (Mech)	3.6	hours	5.50	19.80
Labor (Irrig)	2.0	hours	5.50	11.00
Crop Insurance	1.0	acre	11.00	11.00
Other	-	-	-	-
Subtotal Pre-Harvest				$187.65
Harvest				
Defoliant & Appl.	1.0	acre	9.00	9.00
Strip & Module	45.0	cwt.	1.75	$78.75
Haul Module	2.0	bale	3.00	6.00
Gin	45.0	cwt.	1.65	74.25
Bagging & Ties	2.0	bale	14.50	29.00
Subtotal Harvest				197.00
Total Variable Costs				$384.65
Fixed Expenses				
Set aside land	0.33	acre	16.50	$5.48
Depr. (Mech & Eqpt)	1.0	acre	40.00	40.00
Depr. (Irrig & Eqpt)	1.0	acre	30.00	60.00*
Subtotal Fixed Costs				$105.48
Interest on Operating Capital	188.00	do.	0.085	16.00
Total Costs				**$506.13**
Returns Land & Management				**$253.87**

*Takes into account that equipment is used only 50 percent of the time, since on the average the lakes contain water in 5 of 10 years.

5.4 IRRIGATION POTENTIAL

From the previous analysis, it can be concluded that through careful management, it is possible to derive a net gain on an irrigation enterprise using water temporarily stored in detention basins. Whether a particular modified playa or detention basin would have sufficient water available for irrigation depends upon the contributing watershed area, the size of the basin, and the size of the plot to be irrigated. It appears that only one playa, 846 Playa A (or B if A is not used), would have the combination of sufficient water and storage volume to irrigate a 160-acre plot, if no one else had a similar irrigation operation in the 32-square mile Ackerly-Knott watershed. In the Brown area, there is not a single basin with a large enough watershed (about 30 square miles) to support a 160-acre plot.

Smaller irrigation plots could be supported by proportionally smaller watersheds. Thus, a 40-acre plot requires an eight-square mile watershed. However, the pond must be of sufficient size to carry through two seasons, including losses, which is approximately 30 inches. A 40-acre plot would thus require a basin/playa with minimum storage capacity of 100-acre feet.

After modification, many of the playas and basins in the Ackerly-Knott and Brown areas would have sufficient storage capacity to irrigate 40 acres. However, only about eight operations of this size could be placed in the combined Brown and Ackerly-Knott areas--four in each area. It can be seen that various combinations are possible, but each operation must have the required watershed area of 130 acres per acre irrigated.

Groundwater has been suggested as an alternate source of water for these operations. Most of the wells in this area are low capacity and water quality is highly variable. The only wells in this area appear to be for domestic supply and have limited yield. Whether a conjunctive use operation in which groundwater is used to supplement the highly variable surface water supply should be investigated. It may be that a low-capacity well could fill a ground level concrete storage tank over the winter to provide preplant or full-season moisture. The combination of surface and groundwater could result in a more reliable and effective irrigation enterprise.

In addition, the county might encourage irrigation by purchasing one or more mobile trailer-mounted pumping rigs which could be shared by a number of irrigators. This might be a trade-off in lieu of purchasing leases for the development of the playas and detention basins.

In the Three League area, there are several large basins; however, the water quality in the playas is such that it is apparently not suitable for irrigation. Figure 7 showed that water quality in the playas east of Sulphur Springs is fairly good, whereas west of the Draw, the water is very high in total dissolved solids and chlorides.

The purpose of the overall flood protection plan is to temporarily detain water to reduce peak flows, and then to slowly discharge the water back into the drainage system at a non-damaging rate. If basins are to be used for irrigation, either the water must be utilized immediately or the outflow pipe shut-off to retain the water. If water is retained more than six months or into the next "wet" season, the flood protection purpose is defeated. Therefore, if irrigation is to be performed, and if the outlet pipe is to be equipped with a shut-off valve, the water must be used either immediately if it becomes available during the growing season, or within six months as preplant application if the water becomes available during the fall or winter. This approach will result in little or no diminuation of the flood control benefits.

SECTION 6

SECTION 6
IMPLEMENTATION PLAN

In this section, methods and means to implement the proposed plan are presented. Topics considered are: project costs, sources of funds, institutional arrangements, schedules, constraints, and other impacts.

6.1 PROJECT COSTS AND BENEFIT/COST CONSIDERATIONS

The costs for the conceptual plans are presented in Table 27.

TABLE 27
COSTS FOR PROPOSED PLANS

Area	Estimated Construction Cost	Area Requiring Easements (acres)	Estimated Cost for Easements	Total Cost
Ackerly-Knott	$367,000	909	$91,000	$458,000
Brown	$272,000	351	$35,000	$307,000
Three League	$372,000	272	$27,000	$399,000
Three League Gin	$73,400	1.5	600	$74,000
Valley View Road	$219,000	N/A	___	$219,000
Total	$1,303,400	1,533.5	$153,600	$1,457,000

6.1.2 Benefit/Cost Calculation

As noted in Section 3, the county is estimated to have expended over $2.5 million in general and road tax revenues in the past five years (1986-90) to repair damaged roads from the flooding that began in 1986. Analysis of the expected frequency of flooding and flood damage led to the conclusion that the county was essentially spending, on the average, roughly $155,000 per year to repair roads damaged by floods. The expenditures, however, do not necessarily occur every year. Major flood damage is expected in only one of five years. Therefore, larger expenditures are made in the years following these events, and thus, funds are temporarily diverted from other budgeted activities.

Examining the effectiveness of the proposed flood protection plans, it can be concluded that the plans represent at least a 25-year protection level, on the average. A 25-year level of protection is a four percent probability level. From Table 10 (Section 3), it can be shown that this level of protection would provide at least $64,300 in annual benefits. To this can be added approximately $25,000 in annual benefits due to partial reduction of flood damages occurring from events greater than the 25-year event, including the 100-year (one percent) and beyond. Thus, expected flood damages would be reduced by approximately $90,000 annually by implementing this plan.

The question is whether the county is justified in undertaking the proposed improvements at a cost of $1.5 million to avoid an annual expenditure of $90,000 for flood damage. On an actuarial basis, the present worth of annual damages of $90,000 for 50 years at seven percent interest rate per year is $1.25 million. Nominally, this yields a benefit to cost ratio of 0.83, which is less than 1.0. Therefore, the project is not, <u>on an actuarial basis</u>, economically justified.

However, several factors that may reduce the cost of the project should be considered in this analysis. First, a cost of $100 per acre was included to allow for the fact that occasionally a loss of crop may occur in the impoundment of the modified playas and detention basins. The total cost allowed for this is $154,000. As previously noted, these areas may be significantly flooded once in five years, and since the flooding is more likely to occur when the area is not cropped, the likelihood of a major crop failure in a given year is less than 10 percent. Carefully examining Table 26 (Dryland Cotton Economics) reveals that the monetary loss of a total failure of a crop at the most critical time is $84 per acre. If there is a 10 percent chance of failure in any year, the annual average potential loss is less than $10 per year. Therefore, the payment of $100 per acre to acquire a perpetual easement for occasional flood losses appears reasonable. However, many of the existing playas to be modified, particularly in the Three League and Brown Areas, would either flood non-cultivated land, or will actually improve the playa cultivated area by draining the lake quickly after a storm. Therefore, at least half of allocations of $154,000 for flood easements would not appear to be necessary in reality.

Secondly, Valley View Road has already been substantially improved. It can therefore be assumed that only half of the cost of $219,000 for the area would be necessary.

Finally, the Three League Gin area improvements include $50,000 for a state highway culvert crossing, which may be a project that could be undertaken by the State instead of the county.

Thus, $236,000 in total costs may not be required in the proposed plan, which would reduce the total cost to slightly less than the calculated benefits, and raise the ratio of benefits to costs to a 1:1 correspondence.

When difficult-to-quantify benefits, such as reduced flooding of homes and businesses, reduction in crop losses, and reduced inconvenience to farm, ranch, and oil field operations are considered, the proposed projects are definitely cost-effective and justifiable.

During and after the flood events of 1986, a number of private homes and businesses experienced property damage as well as inconvenience. Flood levels reportedly reached structure foundation levels for a number of homes, perhaps a dozen total, located south of Ackerly, in the Knott area, and in the Three Leaque Gin area. In the latter area, the cotton gin was also flooded. The proposed plans would reduce or substantially eliminate flooding of these structures.

Crop losses would be reduced in some areas in one of two ways. First, the areas with playas that will be modified as part of this plan will be provided with an outlet. This outlet will allow the field to drain following a storm and thus recover more quickly for cultivation. Second, some cropland downstream of proposed structures is damaged by erosion when floodwater which is confined within roadway ditches "breaks-out" into a field. If the flood control plan is undertaken, this type of damage would be significantly reduced.

Oil and gas production facilities are greatly affected by flooding of roads and road wash-outs in the proposed plan areas. It is often not possible to reach some well fields for several days, or even weeks or months following a significant flood event. Farm and ranch operations are similarly effected.

Monetary costs cannot be precisely calculated for these damages. However, in 1988 the United States Department of Agriculture estimated the total losses from recent flooding in the County to be $25 million. These were primarily crop losses reported by the Agricultural Stabilization and Conservation Service (See Appendix A, 9/23/88). Based upon the proportion of total county cultivated acreage (300,000 acres) in Martin County and the amount protected by the proposed plan in the Ackerly-Knott and Brown areas (38,000 acres), and assuming only 50 percent effectiveness of the proposed plan, the losses prevented would have been about $160,000. Using the methodology in Section 3, this would convert to annual damages to crops of about $10,000 that the flood plan would prevent.

Therefore, although approximate, it is conservatively estimated that the "other" flood damages (i.e. to cropland, homes, businesses, and vehicular movement) prevented by the proposed plan would easily exceed an annual cost of $20,000. When these costs are added to the $90,000 previously calculated as the annual reduction in flood damage to county roads, the present net worth of benefits is greater than $1.5 million, and the project is justified.

Finally, there are social benefits to be gained in that "downstream" landowners now being adversely affected by the accumulative effect of poor drainage practices that aggravate flooding will benefit from a general, cooperative effort to reduce flooding, and will be less likely to seek redress in other ways.

6.2 SOURCES OF FUNDS

Unfortunately, there are few sources of funds that are available for flood control projects other than the county's maintenance funds or bond issues, both of which must be paid for through taxes levied on county residents.

There is a possibility that some help may be obtained from the SCS. The SCS may be willing to contribute technical assistance to implement individual projects, and even monetary assistance to construct projects if the projects fall into SCS's general soil and water conservation program initiatives. The potential for this would need to be explored with the SCS.

Recently, the municipal code was amended to allow municipalities to set up stormwater utilities to finance both capital investments and maintenance of stormwater systems by charging fees for these services. This, however, is more suited to cities with extensive facilities and may not be practical for the county.

No other federal or state agencies have outright grants for flood control projects. Most Federal programs now require local matching funds. The United States Army Corps of Engineers (COE) assists local entities for projects that are generally quite a bit larger than that proposed for Martin County. These projects would require strict adherence to Federal guidelines for project justification and generally take many years from initial planning to completion. Therefore, the COE is not likely to be a viable source of finances for Martin County's flood protection plans.

The primary potential contribution of the State of Texas is through the Texas Water Development Board's revolving funds to capitalize flood control and other water projects. The State, in effect, purchases local bonds to finance the local projects. This is done as service to the local entities that may not be able to sell bonds on the open market at a reasonable interest rate. The bonds would be backed by local taxes and retired over a period of time, such as 20 or 30 years. The average interest at the present time would be in the vicinity of seven percent.

If the county chooses to construct the facilities in a short period of time of one or two years, then it may be reasonable to consider a bond issue to capitalize the project. However, if the project is built over a longer period of time, such as 10 years, it may be possible to budget and allocate general tax revenues for that purpose without borrowing. In order to ensure that the county makes the best decision possible on the funding of these projects, it is recommended that the financing recommendations of a financial advisor be sought. The following section describes some possible financing options, but these are provided only to assist the county in determining whether they should proceed beyond this study.

6.3 INSTITUTIONAL CONSIDERATIONS

The county can view these projects in three ways. The first, which is easiest in terms of managing and carrying out the project, is to view the project as beneficial to the county at large. If this is the case, the project could be administered by present county general and road maintenance staff. Not considering inflation, the proposed projects could be constructed in 10 years if $150,000 were allocated per year out of general revenues.

According to county staff, the 1989 road and bridge budget, less capital purchases, was slightly more than $1 million. Therefore, an annual allocation of $150,000 for flood protection would represent about 15 percent of road maintenance funds. The 15 percent is much less than the average of 58 percent ($562,000 per year) the county has spent to repair roads from 1986 through 1989.

The 1989 assessed evaluation of the county is about $394 million. For reference, it would require a tax assessment of about $0.04 per $100 assessed evaluation to finance the annual expenditure of $150,000 for flood control.

The second method would be for the county to issue bonds (after voter approval) and accomplish the entire project at one time. It is expected that this project could be funded by the Texas Water Development Board. If bonds totalling $1,500,000 are purchased by the TWDB for 20 years at seven percent interest, the annual debt service would be $142,000. There would be some additional, engineering, financial, and legal services costs related to a bond issue.

A third method to carry out the flood control program is to organize a Stormwater Control District. Such a district could issue bonds or perform the work over a long period as mentioned above. If the facilities are constructed over a long period, such as 10 years, the district could maintain more focus to ensure the work is funded each year. The district can be formed county-wide or for any part of the county. Stormwater Control Districts are authorized in Section 66 of the Texas Water Code (adopted in 1985 by the 69th Legislature). The purpose of a Stormwater Control District is to ". . .control stormwater and floodwater and abate harmful excesses of water for the purpose of preventing area or downstream flooding in all or any part of a watershed." (Paragraph 66.012, Texas Water Code).

Creating a district requires petition to the Texas Water Commission (TWC) by majority vote of Commissioner's Court or at least 50 persons who reside in the district boundaries. The TWC convenes an Administrative Hearing and if the petition is granted, five temporary directors are appointed by the TWC to organize for an election to be held to confirm the formation of the district and to elect permanent directors.

The stormwater district has power to issue bonds and to levy taxes for the payment of bonds by majority vote of qualified voters on a bond proposition. The district also has the power of eminent domain, and other powers similar to other General Law Districts such as the Martin County Underground Water Conservation District.

Although there are a number of legal and administrative issues that would need to be discussed and resolved in order to undertake the formation of a Stormwater Control District, there are some advantages that the county may consider, such as:

- A district is a separate entity formed for a specific identifiable purpose; and
- A district can receive monies allocated to it from other sources, including the county, and/or levy taxes to undertake improvements and to provide for maintenance and operation of the system.

There are also several disadvantages, such as:

- Potential overlap of county road maintenance activities and flood control activities; and
- Additional administrative overhead involved with adding another subdivision of the county government.

6.4 IMPLEMENTATION SCHEDULE

Regardless of the institutional arrangement, it appears that the county can undertake the flood protection plan in the form of several small projects over a period of years or as one large project. If the county chooses to proceed with several small projects, it is recommended that the projects be undertaken starting from the upper end of the watershed and working down to the lower end. Each project depends upon all the other projects above it being in place in order for it to function properly. The schedule for construction of the projects would depend upon the funding mechanism chosen by the county.

6.5 CONSTRAINTS

There can be many constraints to the development of flood control projects. Not the least of these concerns are for cultural resources, endangered species, loss of wetlands, sediment and erosion control, and dam safety. Cultural resources and endangered species do not appear to be significant issues in the identified project areas of Martin County. However, wetlands, sediment and erosion control, and dam safety are issues that would arise and require resolution as the project is implemented. There do not appear to be any irresolvable issues involved in this flood protection plan; however, several permits may be required.

6.5.1 Loss/Gain of Wetlands

The area contains numerous playas that are normally considered to be wetlands. This project does not propose to eliminate any existing wetlands, nor does it intend to add any wetlands. Existing playas will not be drained below the identified normal high water level. The enhanced playas will temporarily store water above this level, but will drain back down to normal high water within several weeks after the storm.

6.5.2 Sediment and Erosion Control

The Federal Water Pollution Controls Act Amendments of 1972 established the 404 Permit program administered cooperatively by United States Environmental Protection Agency (EPA) and the Corps of Engineers. Unless exempted, a flood control project must normally obtain a 404 Permit if it involves discharge of dredge or fill material into "waters of the United States."

Recently, the EPA and COE issued a memorandum to clarify permit requirements with regard to agricultural activities. Because of the potential importance to this project, a copy of this memorandum is included in Appendix I.

Basically, the memorandum defines agricultural activities that are considered normal farming operations and are therefore exempt from 404 Permit requirements. A study of this document results in the following conclusions:

- The playa modifications and detention basins cannot be regarded as "normal farming operations" and are not exempt for that reason, but may be exempt for other reasons;

- Playa modifications proposed herein would not alter the playa below the normal high water line. In other words, the part of the playa that is considered wetlands would neither increase or decrease as a result of the modifications;

- Playas that are now farmed and have been farmed for some time may apparently continue to be farmed under these rules without a 404 Permit;

- Detention basins on land not now identified as wetlands will be drained after every event and therefore will not become wetlands after the fact;

- The objective of playa modification and detention basins is to detain water temporarily to reduce peak discharges and flood damage. The basins will also impound sediment. Therefore, the project will reduce erosion and sediment discharge and is in keeping with the general intent and purpose of the Section 404 program, and may be exempt for that reason;

- If, however, modifications are not exempt, it appears likely that they may be eligible for a General Permit as projects that will cause only minimal adverse environmental effects. A General Permit would cover all projects of a particular type in a region; and

- The worst case scenario is that an individual permit may be required. If so, the process may require the development of additional data on environmental impacts, and there would be delays that result from the public notification and review process. There would also be additional costs to develop the permit application.

To summarize, it would appear likely that a 404 Permit will be required. However, as indicated in the COE memorandum (Appendix B), it also appears that the project may be eligible for a General Permit. In either case, the COE should be notified by submitting a permit application prior to undertaking the project. This initiates the review process, during which time a determination will be made as to the type of permit required, and whether additional data will be needed.

6.5.3 Dam Safety

Dam safety is regulated in Texas by the Texas Water Commission (see 31 Texas Administrative Code Chapter 299). The dams proposed in this plan are all anticipated to be classified as small, low hazard structures. The maximum height of proposed dams ranges from six to 13 feet. The dams may or may not be exempt from minimum hydrologic criteria, that is, that the dam must pass 25% of the Probable Maximum Flood (PMF) without overtopping. If the dam height is less than six feet, the structure is automatically exempt. Given the rural nature of this project and improbability of loss of life or any structural damage other than to unpaved county roads, it is likely that even the dams greater in height than six feet could be exempted.

Although the dams may be exempted, in order to preserve structural integrity and reduce maintenance, the dams should be designed with an emergency spillway to pass 1.7 times the 100-year flood, which is roughly equivalent to the 500-year flood. In many cases, such a spillway may even meet the 25% PMF criteria. This may require a shallow grassed emergency spillway channel in most cases not more than 50 or 100-feet wide and one to two feet high. The earth excavated out of this channel would be used to construct the embankment.

Impoundment Permit. If water from the modified playas or detention basins is used for irrigation, an impoundment permit will be required under Section 11 of the Texas Water Code. This section generally refers to a dam erected to impound water for other than domestic and livestock purposes. Furthermore, Section 11 indicates that a permit is required to appropriate stormwater stored in a natural lake for irrigation purposes.

6.6 NATURAL DAM LAKE IMPACTS

Recently, the Colorado River Municipal Water District (CRMWD) undertook extensive modifications to Natural Dam for dam safety purposes. Natural Dam Lake is several miles downstream from the project area, and Sulphur Springs Draw (or Sulphur Springs Creek, as it is called in the lower reaches) is a major tributary of Natural Dam Lake.

This project is expected to have a minimal but generally beneficial impact on Natural Dam Lake, because the project will reduce peak flows discharging into Sulphur Springs Draw from 130 square miles of watershed.

If the Ackerly-Knott and Brown areas are provided with an 18-inch diameter outlet as part of this project, a small volume of water, estimated to be less than 1,000 acre-feet per year, will flow to the Draw that did not previously reach it. The water quality samples taken of this water indicate that it is quite low in total dissolved solids (TDS) and chlorides (Cl). Natural Dam Lake is known to be very high in TDS, and therefore, the impact water from Ackerly-Knott and Brown areas would have a beneficial, although very minor, effect on the water quality of Natural Dam Lake. The original capacity of Natural Dam Lake was about 26,000 acre-feet prior to the recent dam modifications (FN, Undated).

The outlet to the Draw for the Ackerly-Knott and Brown areas would not be necessary if full-scale irrigation of stored flood water was undertaken in these areas.

SECTION 7

SECTION 7 - SUMMARY AND RECOMMENDATIONS

A flood protection plan has been developed for frequently flooded areas in the northeastern and north central part of Martin County. For three areas totalling 130 square miles, detailed HEC-1 hydrograph models were used to develop a flood protection plan which involves increasing the temporary storage capacity of existing playas and constructing other detention basins.

In the Ackerly-Knott area, nine dam structures are proposed; five are expansions of existing playas and four are new detention ponds. In addition, an outlet is proposed to draw down the SH 846 playas following a storm. The total cost of these facilities is estimated to be $458,000, including easements.

In the Brown area, eleven projects are proposed. Eight of these projects involve only the installation of a small channel and/or pipe outlet to drain the playa back to natural high water level following a storm. Two of the projects involve a dam to expand playas, and one involves a new detention basin. These facilities are estimated to cost $307,000 to construct, including easements.

In the Three League area, three large playas will be enlarged to reduce flooding on several miles of road in this area. The construction cost of the three dam structures and the associated raising or relocation of county roads is estimated to be $399,000.

In addition to these facilities, the size and capacity of a channel to drain along Valley View Road right-of-way was calculated, and the cost to excavate a channel of that size was calculated at $219,000. However, much of this work has already been done, and further improvements may not be a high priority at this time.

Finally, a diversion channel was proposed for the Three League Gin community at an estimated cost of $74,000. The total estimated cost to construct all facilities is about $1.5 million.

Some design considerations are:

- Provide 24-inch diameter outlets to drain playas back down to normal high water line. Other detention basins should be drained dry; and

- Provide emergency spillways and freeboard on dams (one to two feet)to pass 1.7 times the 100-year peak flow without overtopping.

It was determined that irrigation could be economically performed for the larger basins in the Ackerly-Knott and Brown areas. Although less watershed area could be used, it appears that 130 acres of watershed would be optimally required to reliably irrigate one acre of cotton every other year, on the average.

It was determined that good management and additional fertilization would make an irrigation operation profitable in this area utilizing stormwater as the water source. It is possible that groundwater could be used as an alternative source in order to irrigate every year and to provide a more reliable and consistent water supply. However, whether sufficient well capacity of suitable quality can be obtained would need to be determined on a site-specific basis. Well specific yields are generally low and water quality highly variable in this area. Filling the basin or a concrete tank (to minimize seepage loss) over winter with groundwater using low capacity wells would likely improve the economics of the operation.

A cost benefit analysis determined that benefits of the protection plan would be approximately equal to the cost. However, benefits for which it is difficult to establish a monetary value, such as the reduction in damage to cropland, homes, businesses, and inconvenience and loss of time when roads become impassible, and quality of life issues, are sufficiently important to justify the undertaking of this plan.

If the protection plan is implemented, the following recommendations are made:

- Obtain the advice of a financial advisor and determine the best means to pay for or finance the improvements, including bonding alternatives;

- Whether financed by bonds or accomplished as a 10-year staged plan, the project is estimated to require an annual allocation of $150,000 either from existing county tax revenues, or from a new county-wide tax levy of about 4¢ per $100 assessed evaluation;

- Administer the program using present county administrative staff; or, create a Stormwater Control District encompassing all or part of the county to administer the program and provide for on-going maintenance of the system;

- Coordinate efforts with SCS for technical support, encouragement of repair and proper maintenance of terraces, and possible financial support of the projects;

- Submit a 404 Permit Application to initiate review of the project by COE;

- Determine status of proposed dams with respect to state dam safety criteria; and

- Explore means to reduce land acquisition costs by offering to insure basin owners against crop losses, or assisting with purchase of some part of irrigation equipment if irrigation is appropriate.

SECTION 8

SECTION 8 - REFERENCES

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APPENDIX A

Martin County News,
Oct 9, 1986

Flooding creates lakes, destroys cotton

Rain! Rain came the rain for forty days and forty nights the rain fell and the world was flooded.

Noah may have lived in Martin County, for after the driest years of recorded weather history Martin County roads, fields and crops are being flooded, destroying much of Martin County's county cotton crops.

Martin County farmers report that they may have good milo or hay crops depending on the weather and rain stopping.

Suddenly, one of west Texas's driest counties has recreation lakes with high powered skis speed boats and surf sails.

State road 829, 15 miles northwest of Stanton will be closed for two months, local residents believe. The lake covers approximately thirty acres.

Another 35-acre lake blocks Highway 2002 four miles East of Three League's.

Highway 137, both east and west of Stanton was closed for various times this summer.

Lakes dot the fields of Martin County removing hundreds of acres from productive use.

Lake sizes vary from Harold Henley, 10-acre lake, four miles west of Stanton, to a multi hundred acre lake winding back and forth across the Martin and Howard County lines encompassing parts of several farms.

The Sawyer farm is host to a 30-acre lake.

Fourteen miles west of Stanton, Highway 29 serves as a dam dividing a 20-acre lake.

Last week's rains served to refill some lakes that Martin county farmers were hoping to re-enter.

The Cliff Hazlewood farm which has been damaged by the deluge of '86 received three more inches last Thursday and Friday.

Helen Thraikill reports six inches of rain Wednesday night. The roads were so bad that a four wheel drive vehicle had to be used to bring Helen to Stanton.

L.R. Shoemaker reports that he received another 3 and 7/10 inches, while Rufus Tom reported 4 1/2". Southeast of town received only an inch refilling a small 5-acre lake.

Teddy Stewart nine miles west of Stanton received 2.2 inches while Tommy Newman who farms 11 miles Northwest of Stanton received four inches of rain.

Grover Springer, official U.S. weather reporter for Martin County reports that he believes part of Martin County has received up to 30 inches of rain this year.

Several farmers reported that they believe at least 75% of Martin County's fields have had or now have lakes this year.

According to Martin County farmers this years cotton crop was destroyed by excess rain, and lack of the hot dry weather needed to produce strong boll development and formation.

Many farmers are not planning to harvest their fields.

Paradoxically, this year's crop is one of the bushiest, tallest and greenest in years.

Rufus Tom, for instance, has 3 1/2" foot high cotton that should make 1½ bales per acre, but will perhaps produce ½ bale per acre this year.

Both Stewart and Newman believe that their 2-foot tall cotton will make about one bale of cotton per acre with only 50 lbs. of lint per acre.

Both flea hoppers and fleas have contributed to the crop failure.

Ironically, the sandy land farms near Klondike in Martin County are showing signs of a lack of rains while farms located in the so called dry flat have excellent crops. They did not receive subsequent rains that swept through much of Martin County this summer.

Nearly 75 percent of Martin County Roads and Fields have been under water during the 1986 Rainy Season. Some estimates show that over 50 percent of Martin County's Fields still have lakes in them.

MARTIN COUNTY NEWS, February 26, 1987

Tollison pinpoints road damages

County Commissioner Donald L. Tollison has outlined major roads in his district damaged by rains. He also praised the attitude of the residents of Martin County.

Tollison's statement, requested by Martin County News, follows: County roads in precinct two of Martin County have been inundated the past eight months with approximately 60 inches of rain causing several roads to be closed or difficult to drive on. The hardest hit of these roads were in the Northern part of the precinct.

The old Valley View road and other East-West roads received the major portions of run off water which comes from South of State Highway 176 and the Lenorah area then North along State Highway 137. Folks that have lived or farmed in this area have told me that they haven't seen rains of this magnitude in over 50 years.

The existing road that is proposed extension of State Highway 3033 has been closed four miles North of Highway 176 since the last of May and probably will remain closed for some time yet. There just isn't many ways to drain these low places that collect a good portion of the run off water.

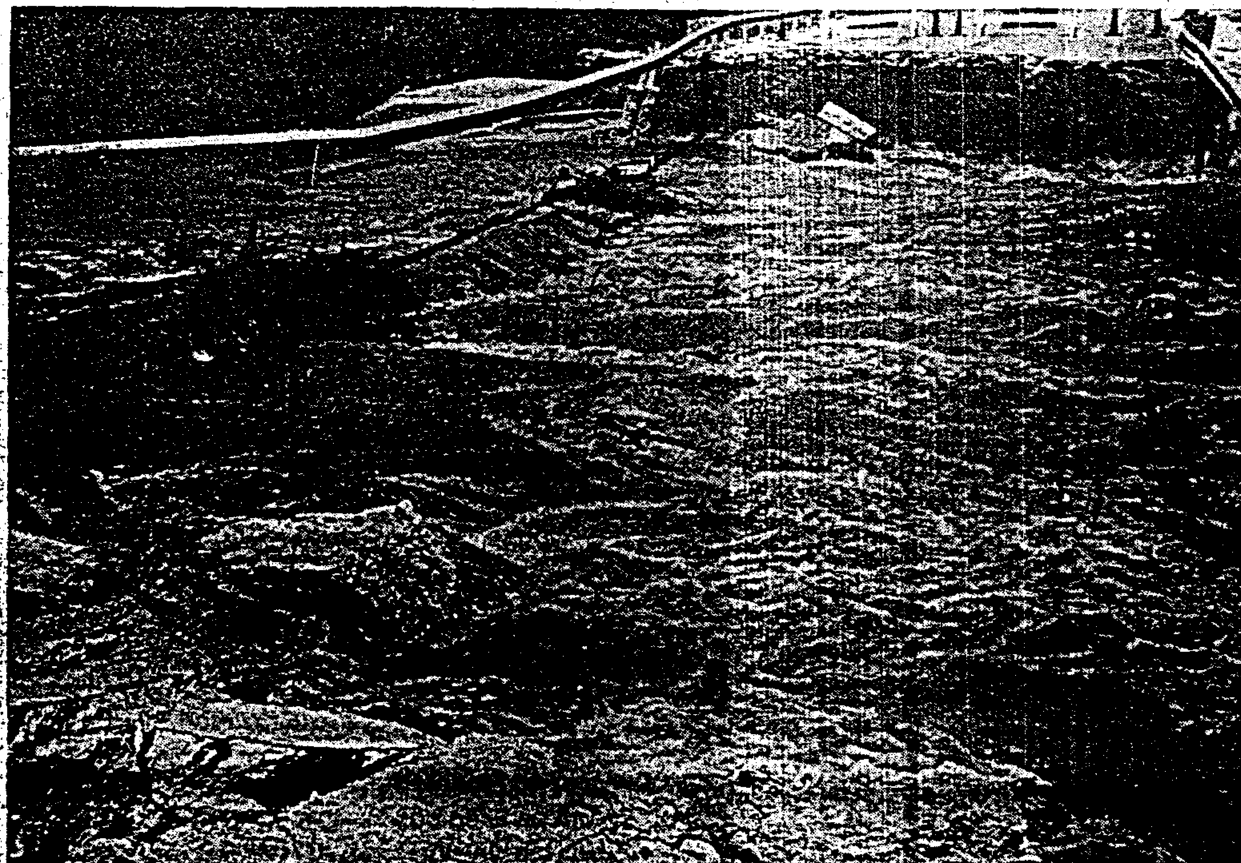
The old Valley View road is closed four miles East of Highway 137 and is just a quagmire of water and silt.

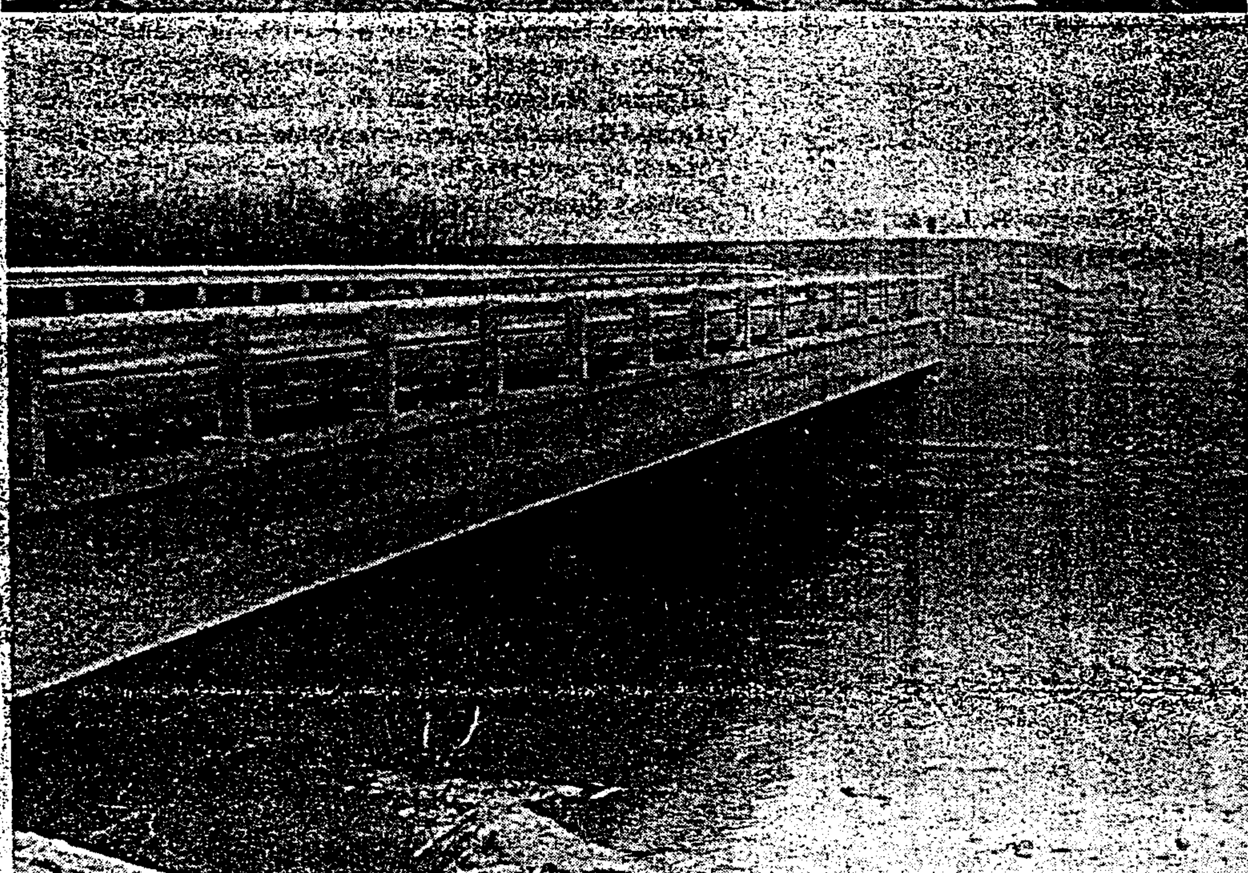
We have completely lost several miles of caliche road at one time or another during this period of time. Most all have been reworked and are in decent condition. We expect to begin resurfacing some of these in the near future.

I feel these rains have just about washed away most of the road improvements that were made in the past four years.

Our county crews have worked very hard and diligently during these times to maintain our roads in passable conditions.

I think one of the most important aspects of this natural disaster is that our citizens have maintained a very admirable attitude during these difficult times, that not only damaged our roads, but literally ruined hundreds of acres of valuable crops and farm land.





(Photos by Roy Lee Barnhill)

NEW BRIDGE IN SERVICE — Martin County traffic can now use the recently opened bridge on FM 846 at Sulphur Draw. The old structure was wiped out by flood waters on Sulphur Draw in June of 1987. Construction of the new bridge was delayed by continuing water problems. The Highway Department project was completed at a cost of $219,000.

Stanton
Herald
Serving All of Martin County

Wednesday
Vol. 1, No. 52 July 27, 1988

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Officials view flood problems in area

Heavy rains last week in the northeast portion of Martin County compounded flooding problems from the prior weeks rainfall. In the area east of Highway 137 and north of Highway 176 many farmers reported rainfall ranging from four to six inches. Much of the Ackerly, Brown, and Knott areas had received 10 inches the preceding week.

State Sen. John T. Montford, D-Lubbock, on Saturday, July 23, toured extensive portions of northeast Martin County and the northwestern corner of Howard County to survey the serious flooding problems as a result of the recent heavy rainfall in the region.

Montford was accompanied by Martin County Judge Bob Deavenport, Sheriff Dan Saunders, Commissioner E.D. "Wimp" Holcomb, and Marshall Huffman, district engineer with the State Department of Highways and Public Transportation from Odessa.

Montford saw the standing water, washed out roads, flooded homes, and other problem areas, touring the region on ground and by air in a private plane.

"It's a lot worse than I imagined," Montford said. "We are going to get the local and regional authorities together with the various state agencies and federal agencies to help with this problem," Montford stated.

Montford represents the 28th Senate District of Texas which includes Martin and Howard Counties and 12 other counties in the Permian Basin and South Plains.

Commenting on road conditions in the north end of Martin County, Huffman said contractor crews were now working on FM 2002 near Three League and should have that road open this week.

Concerning the two areas on FM 846 east of Sulphur Draw that are still under water, Huffman advised they expected water to remain high in that area for sometime and that this week contractors would start fill work.

Estimated cost for this work will be $80,000 over the contract of work that is currently in progress. Huffman disclosed the heavy rains had delayed work on these segments by approximately two months.

WATER, WATER AND MORE WATER POES WOES — Seeing is believing. While much of the nation is suffering from a drought, the northeast section of Martin County is hard hit by too much water. State Sen. John Montford, D, Lubbock, shown above in top left photo, discuss a muddy "lake" with Marshall Huffman, right, district engineer with the State Department of Highways and Public Transportation headquartered in Odessa. In center photo, Martin County Commissioner E. D. "Wimp" Holcomb, second from right, uses his hands to help explain flood damages to Ray Long, Brown farmer; Sheriff Dan Saunders, Sen. Montford, and Morris Wilkes, Lubbock, aide to Montford, right. Sheriff Saunders is shown trying to "dig out" with a shovel after a sheriff's department car became "stuck in the mud." Holcomb offers advice, right photo.

Stanton Herald, Wednesday, August 24, 1988

WATER PROBLEMS LINGER — Local officials continue to ponder the flooding situation in northeast Martin County. In the top picture, James Biggs, left, and Ronnie Deatherage, county commissioners, board a plane supplied by the CRMWD, to get an aerial view of the situation. In the center photo, Morris Wilkes, administrative assistant to Sen. John Montford (D-Lubbock) and Owen Ivie, CRMWD manager, discuss the problem. The bottom photo shows a stretch of FM 846 near Knott closed by high water. Martin County Commissioners Don Tollison and E.D. "Wimp" Holcomb were named to serve on a study group along with Dawson and Howard County representatives.

Big Spring Herald
The Crossroads of West Texas
16 Pages 2 Sections Vol. 61 No. 97 35¢
Friday
September 23, 1988

Crossroads weather

Forecast for the Big Spring area: Mostly fair; partly cloudy tonight with scattered late afternoon and nighttime thunderstorms, possibly severe. Mostly fair Saturday. Highs Saturday mainly in the 80s. Lows tonight mid 50s; high Thursday was 87, low was 60.

Sulphur Draw group studies water, funds


PAUL ALLEN

By SARAH LUMAN
Staff Writer

STANTON — The Sulfur Draw watershed study group — meeting for the first time — has begun planning a study of flooding and possible solutions in the watershed. Also being considered is the impact on Natural Dam Lake, Beal's Creek and Big Spring.

Howard County Commissioner Paul Allen was named vice chairman of the group by acclamation Thursday. The panel named Martin County Commissioners E.D. Holcomb, chairman, and Donald Tollison, secretary, by acclamation.

In a 3½-hour meeting — that sometimes sounded like an extended session of a county commissioners' court — the panel's members (five county commissioners and representatives from the city of Big Spring and the Colorado River Municipal Water District) discussed possible study funding with Texas Water Development Board representatives.

Reg Arnold, the board's executive administrator, also said the problems along Sulfur Draw are related to problems with Beal's Creek and Big Spring sewage treatment plant operations.

Dan Black, a financial analyst for the board, pointed out that loans are available — with interest rates varying from as low as 5 to as high as 8½ percent — for water development, sewage treatment and flood control projects statewide through the sale of bonds.

In addition to those bond sale supported loans, the panel also may be able to garner funds from the board's 50-percent study grant — a prospect that caused Big Spring representative Tom Decell to raise the question of where the other 50 percent would come from.

As a direct result of his question, Holcomb and Decell discussed a proposal to have Decell contact the U.S. Army Corps of Engineers concerning possible expansion of its study of Beal's Creek upstream to beyond Natural Dam Lake.

CRMWD assistant general manager Rod Lewis told the group that the water district has already begun work to strengthen Natural Dam, which presently contains approximately 20,000 acre-feet of water. Once the work on the dam is finished, Lewis said, estimates are that the dam could contain 40,000 to 45,000 acre-feet of water, larger than Lake Colorado City.

But, he said, that would mean the Andrews Highway would be underwater. The lake peaked earlier this summer at almost 30,000 acre feet, Lewis said, an amount of water about equal to Lake Colorado City.

The water is of poor quality and high salt content, however, and is being released gradually into Beal's Creek; eventually the saltwater arrives in Lake E.V. Spence, from which CRMWD supplies water for the cities of Big Spring, Midland, Odessa and points between, CRMWD officials have said.

Allen expressed concern about the ability of Natural Dam, which is currently being strengthened by the district and has been nearly overtopped in the past, to indefinitely contain large amounts of water.

The group also heard from engineering representatives with the water development board, who offered to contract for construction of flood control projects once funding is available.

Big Spring representative D.D. Johnston raised the question of the group's authority and what it will be named, saying that those details are necessary for applying to the water board for funding and other assistance with the studies.

As a result, Jerry Tschauner of the Permian Basin Regional Planning Committee agreed to research the panel's legal responsibilities and provide an outline of the authority available under various names.

The group will meet again after information from Decell and Tshauner becomes available,

SULPHUR page 3-A

and approached the vehicle, court decision and was released on bond said.

Sulphur

Continued from page 1-A

Holcomb said.

He specified that the group would meet again within at least 30 days "because if we let it go longer than that we are letting this thing lag and letting it die."

Morris Wilkes, aide to Texas Senator John Montford, D-Lubbock, was also present and promised help through the senator's office to assist the group in any way possible with funds searches. He also said the senator's office will coordinate the group's work with the state highway department.

Flooding in the watershed has been blamed for repeated washouts of county and state roads, damage to croplands and farm homes, and damage to personal property. Martin County Judge Bob Deavenport estimated that losses in Martin County amount to 10,000 acres of cropland.

Howard County Commissioner O.L. (Louis) Brown also attended, as did Dawson County Commissioner Rudy Arredondo. Nestor Hernandez and Alvin Riddle, representing the Martin County Agricultural Stabilization and Conservation Service and Soil Conservation Service respectively, also attended.

Riddle and Hernandez told the panel that funds for individual farm conservation projects were available through the ASCS and SCS offices and federal farm programs. Hernandez said some $20,000 in conservation funds had been returned to the federal government from Martin County this year — because no one applied for them.

Martin County prepares flood study

By ED TODD
Staff Writer

Friday, September 23, 1988
Midland Reporter-Telegram

STANTON — An engineering study to determine how to rid northeast Martin County of flood waters that are ruining farmland and flooding houses and roads is in the planning stages, according to Martin County Judge Bob Deavenport.

"It is serious," he said Thursday. "The rains last weekend sure didn't help anything."

Sulphur Springs Creek or Sulphur Draw, which flows southeasterly though the county, is flooding its brackish waters into cotton fields and is fueling salt-cedar shrubs, which thrives on salty soil and displaces cotton and grasses.

The runoff from summer rains has flooded farmland in the Brown and Flower Grove farming areas of Martin County and the nearby Knott community area in Howard County.

Deavenport estimated that 10,000 acres of farmland in northeast Martin County are in serious trouble.

"That farmland is either under water or is heavily damaged," Deavenport said. "That's a lot of good farmland."

And an additional 50,000 acres have been taken out of cotton production due to the overland flooding and from water rising to the topsoil from the mysteriously-rising Ogallala Aquifer. Damage to cropland, roads, houses, and other property has been estimated at $25 million by Nestor Hernandez, Martin County executive director of the United States Department of Agriculture's Agricultural Stabilization and Conservation Service. "We've got an awful lot of cropland that's under water," Nestor said.

A state agency and area groups are studying the rising-water problem.

Reg Arnold, executive administrator for the Texas Water Development Board, and his staff are looking into the phenomenon.

"The group is going to pursue a number of resources," Deavenport said, "and work toward having an engineering study. I think they will be very cooperative in studying it (the problem)."

Arnold and four members of his staff discussed the rising water problems here Thursday with the newly-organized Sulphur Draw Study Group. Others who joined in the meeting included Rod Lewis, assistant administrator of the Colorado River Municipal Water District in Big Spring; Jerry Tschauner, planning director for the Permian Basin Regional Planning Commission in Midland, and Morris Wilkes, administrative assistant to Texas Senator John Montford of Lubbock.

Making up the Sulphur Draw Study Group are: Dawson County Commissioners Rudy Arredondo and Guy Kinnison; Howard County Commissioners Paul Allen and Louie Brown; Martin County Commissioners E.D. Holcomb and Donald Tollison, and City of Big Spring officials, D.D. Johnston, city councilman, and Tom Decell, the city's director of public works.

Holcomb, a farmer, is chairman of the study group. Allen is vice chairman. And Tollison, a businessman, is secretary.

"We need in the worst way to drain some land," Deavenport said, "but you've got to consider the impact on Natural Dam Lake."

Sulphur Draw flows into the lake, a 21,000-acre-foot impoundment west of Big Spring.

"I believe it's a little worse since the last rain," Deavenport said. "A lot of the problem in bringing more (water) through the draw."

The rising and flooding waters appeared after unusually heavy rains following a period of droughts, noted Alvin Riddle, Martin County district conservationist for the USDA's Soil Conservation Service.

The rains, which farmers usually welcome without complaint, fell generously but in quantities they didn't plan on.

"We've never had this high-intensity, short-duration rain," Riddle said. "And you can't control it. That's the same way with wind. When you've got wind blowing at 75 miles an hour, you're not going to control it."

Stanton Herald, Wednesday, October 5, 1988

Holcomb elected to head Sulphur Draw group

Representatives of local area governing bodies have continued their work concerning flooding that has occurred in Howard, Dawson and Martin Counties over the last few months.

The Sulphur Draw Study Group was orgnaized as a result of a meeting of area officials. The groups is composed of two representatives from each county as well as the city of Big Spring.

Following a recent meeting with staff members of the Texas Water Development Board the group elected officers. Commissioner E. D. Holcomb from Martin County was selected as chairman with Martin County Commissioner Donald Tollisoin serving as secretary. Paul Allen, a Howard County Commissioner, is vice-chairman.

Holcomb advised that assignments were given to different group members and that the group will be meeting again shortly.

APPENDIX B

RECEIVED MAY 1 8 1990

US Army Corps
of Engineers
Fort Worth District

Public Notice

Applicant: N/A

Permit Application No.: N/A

Date: May 11, 1990

The purpose of this public notice is to inform you of a proposal for work in which you might be interested. It is also to solicit your comments and information to better enable us to make a reasonable decision on factors affecting the public interest. We hope you will participate in this process.

Regulatory Program

Since its early history the US Army Corps of Engineers has played an important role in development of the nation's water resources. Originally this involved construction of harbor fortifications and coastal defenses. Later duties included the improvement of waterways to provide avenues of commerce. An important part of our mission today is the protection of the nation's waterways through the administration of the US Army Corps of Engineers Regulatory Program.

Section 10

The US Army Corps of Engineers is directed by Congress under Section 10 of the River and Harbor Act of 1899 (33 USC 403) to regulate *all work or structures in or affecting the course, condition or capacity of navigable waters of the United States.* The intent of this law is to protect the navigable capacity of waters important to interstate commerce.

Section 404

The US Army Corps of Engineers is directed by Congress under Section 404 of the Clean Water Act (33 USC 1344) to regulate the *discharge of dredged and fill material into all waters of the United States including wetlands.* The intent of this law is to protect the nation's waters from the indiscriminate discharge of material capable of causing pollution and to restore and maintain their chemical, physical and biological integrity.

Contact

Name Mr. Jim Townsend

Phone Number (817) 334-4625

SPECIAL PUBLIC NOTICE

CLEAN WATER ACT SECTION 404 REGULATORY PROGRAM
AND AGRICULTURAL ACTIVITIES

Enclosed is a copy of a Memorandum for the Field jointly prepared by the U. S. Environmental Protection Agency and the Army Corps of Engineers regarding the application of the Section 404 regulatory program to agricultural activities. The Memorandum was prepared in response to numerous questions that have been raised recently regarding the applicability of the Section 404 regulatory program to agriculture.

This Memorandum provides clarification to the Corps and EPA field offices on the applicability of the Section 404 regulatory program to agriculture. This memorandum confirms the way in which the Corps and EPA field offices have generally implemented the Section 404 program. Thus, it serves as clarification of the agencies' current field practices. It also provides information valuable for the general public clarifying the regulatory approach of the Corps on agricultural activities.

The memorandum clarifies that if a farmer is producing crops on land that has been in cultivation in an ongoing manner and he uses normal farming practices, his activities generally do not require a permit from the Corps. The memorandum provides specific information on the regulatory requirements for activities such as rotational rice farming, and fish pond construction.

United States Environmental Protection Agency
Office of Water
Washington, D.C. 20460

United States Department of the Army
Office of the Assistant Secretary
Washington, D.C. 20310-0103

3 MAY 1990

MEMORANDUM FOR THE FIELD

SUBJECT: Clean Water Act Section 404 Regulatory Program and Agricultural Activities

A number of questions have recently been raised about the applicability of the Clean Water Act Section 404 Regulatory Program to agriculture. This memorandum is intended to assist Section 404 field personnel in responding to those questions and to assure that the program is implemented in a consistent manner. At the outset, we should emphasize that we respect and support the underlying purposes of the Clean Water Act regarding the exemption from Section 404 permitting requirements for "normal farming" activities. The exemptions (at Section 404(f) of the Act) recognize that American agriculture fulfills the vitally important public need for supplying abundant and affordable food and fiber and it is our intent to assure that the exemptions are appropriately implemented.

What are normal farming activities? Who makes that determination? Can agricultural producers plant crops in wetlands areas that have been farmed for many years? These are questions that have generated significant confusion and concern in the agricultural community. This memorandum will explain the extent of the Section 404 program and clarify some misunderstandings that may exist in the field. Therefore we encourage you to widely distribute this memorandum.

What is Section 404?

The Federal Water Pollution Control Act Amendments of 1972 established the Section 404 Regulatory Program. Under this Act, it is unlawful to discharge dredged or fill material into waters of the United States without first receiving authorization (usually a permit) from the Corps, unless the discharge is covered under an exemption. The term "waters of the United States" defines the extent of geographic jurisdiction of the Section 404 program. The term includes such waters as rivers, lakes, streams, tidal waters, and most wetlands. A discharge of dredged or fill material involves the physical placement of soil, sand, gravel, dredged material or other such materials into the waters of the United States. Section 404(f) exemptions, which were added in 1977, provide that discharges that are part of normal farming, ranching, and forestry activities associated with an active and continuous ("ongoing") farming or forestry operation generally do not require a Section 404 permit.

With this background in mind, we can now turn to the issues that are the focus of concern. As previously noted, Section 404(f) exempts discharges of dredged or fill material into waters of the United States associated with certain normal agricultural activities. Of course, activities that do not involve a discharge of dredged or fill material into waters of the United States never require a Section 404 permit. Further, as provided in the Interagency Federal Manual for Identifying and Delineating Jurisdictional Wetlands, while a site is effectively and legally drained to the extent that it no longer meets the regulatory wetlands hydrology criteria (as interpreted by the Interagency Manual), it is not a wetland subject to jurisdiction under Section 404 of the Clean Water Act.

What is the "normal farming" activities exemption?

The Clean Water Act exempts from the Section 404 program discharges associated with normal farming, ranching and forestry activities such as plowing, cultivating, minor drainage, and harvesting for the production of food, fiber, and forest products, or upland soil and water conservation practices (Section 404(f)(1)(A)). To be exempt, these activities must be part of an established, ongoing operation. For example, if a farmer has been plowing, planting and harvesting in wetlands, he can continue to do so without the need for a Section 404 permit, so long as he does not convert the wetlands to dry land. Activities which convert a wetland which has not been used for farming or forestry into such uses are not considered part of an established operation, and are not exempt. For example, the conversion of a bottomland hardwood wetland to crop production is not exempt.

In determining whether an activity is part of an established operation, several points need to be considered. First, the specific farming activity need not itself have been ongoing as long as it is introduced as part of an ongoing farming operation. For example, if crops have been grown and harvested on a regular basis, the mere addition or change of a cultivation technique (e.g., discing between crop rows to control weeds rather than using herbicides) is considered to be part of the established farming operation. Second, the planting of different agricultural crops as part of an established rotation (e.g., soybeans to rice) is exempt. Similarly, the rotation of rice and crawfish production is also exempt (construction of fish ponds is not an exempt activity and is addressed on page 5 of this memorandum). Third, the resumption of agricultural production in areas laying fallow as part of a normal rotational cycle are considered to be part of an established operation and would be exempted under Section 404(f).

However, if a wetland area has not been used for farming for so long that it would require hydrological modifications (modifications to the surface or groundwater flow) that would result in a discharge of dredged or fill material, the farming operation would no longer be established or ongoing.

As explained earlier, normal farming operations include cultivating, harvesting, minor drainage, plowing, and seeding. While these terms all have common, everyday definitions, it is important to recognize that these terms have specific, regulatory meanings in relation to the Section 404(f) exemptions. For example, plowing that is exempt under Section 404(f) means all mechanical means of manipulating soil, including land levelling, to prepare it for the planting of crops. However, grading activities that would change any area of waters of the United States, including wetlands, into dry land are not exempt. Minor drainage that is exempt under Section 404(f) is limited to discharges associated with the continuation of established wetland crop production (e.g., building rice levees) or the connection of upland crop drainage facilities to waters of the United States. In addition, minor drainage also refers to the emergency removal of blockages that close or constrict existing drainageways used as part of an established crop production. Minor drainage is defined such that it does not include discharges associated with the construction of ditches which drain or significantly modify any wetlands or aquatic areas considered as waters of the United States. Seeding that is exempt under Section 404(f) includes not only the placement of seeds themselves, but also the placement of soil beds for seeds or seedlings on established farm or forest lands. Cultivating under Section 404(f) includes physical methods of soil treatment to aid and improve the growth, quality, or yield of established crops. Except as provided under Section 404(f)(2) as explained below, construction or maintenance of irrigation ditches or maintenance of drainage ditches is also exempt.

Recognizing area and regional differences in normal farming practices, EPA and the Corps agree to develop additional definitions of normal farming practices in consultation with the designated Land Grant Colleges and the Cooperative Extension Services. We also further encourage our field staffs to utilize the expertise in these colleges and agricultural services in the ongoing implementation of the Section 404 program.

When the normal farming activity exemptions do not apply

Section 404(f)(2) provides that discharges related to activities that change the use of the waters of the United States, including wetlands, and reduce the reach, or impair the flow or circulation of waters of the United States are not exempted. This "recapture" provision involves a two-part test that results in an activity being considered not exempt when both parts are met: 1) does the activity represent a "new use" of the wetland and, 2) would the activity result in a "reduction in reach/impairment of flow or circulation" of waters of the United States? Consequently, any discharge of dredged or fill material that results in the destruction of the wetlands character of an area (e.g., its conversion to uplands due to new or expanded drainage) is considered a change in use of the waters of the United States, and by definition, a reduction of their reach, and is not exempt under Section 404(f). In addition, Section 404(f)(1) of the Act provides that discharges that contain toxic pollutants listed under Section 307 are not exempted and must be permitted.

However, discharges that are not exempt are not necessarily prohibited. Non-exempted discharges must first be authorized either through a general or individual Section 404 permit before they are initiated.

What are General Permits?

Even if a farming activity is one that does not fall under an exemption and a permit is required, some farming activities are eligible for General Permits. Section 404(e) of the Act authorizes the Corps, after notice and opportunity for public hearing, to issue General Permits on a State, regional or nationwide basis for certain categories of activities involving a discharge of dredged or fill material in waters of the United States. Such activities must be similar in nature and cause only minimal adverse environmental effects. Discharges authorized under a General Permit may proceed without applying to the Corps for an individual permit. However, in some circumstances, conditions associated with a General Permit may require that persons wishing to discharge under that permit must notify the Corps or other designated State or local agency before the discharge takes place. A list of current General Permits is available from each Corps District Office, as well as information regarding notification requirements or other relevant conditions.

Rice farming

Questions have arisen regarding the relationship of the Section 404 program to rice farming. We understand these concerns, and recently have initiated actions that will allow farmers to understand better the regulatory program and provide more efficient and equitable mechanisms for implementing provisions of the Section 404 program.

In an April 19, 1990 letter responding to a request from Senator Patrick J. Leahy, Chairman, and 11 members of the Senate Committee on Agriculture, Nutrition, and Forestry, we stated our position that discharges of dredged material associated with the construction of rice levees for rice farming in wetlands which are in established agricultural crop production are "normal farming activities" within the meaning of

Section 404(f)(1)(A) and are therefore exempt from Section 404 regulation under the following conditions:

1) the purpose of these levees is limited to the maintenance and manipulation of shallow water levels for the production of rice crops; and

2) consistent with current agricultural practices associated with rice cultivation,

- the height of the rice levees should generally not exceed 24 inches above their base; and

- the material to be discharged for levee construction should generally be derived exclusively from the distribution of soil immediately adjacent to the constructed levee.

Land levelling for rice farming in wetlands which are in established crop production also is a "normal farming activity" within the meaning of Section 404(f)(1)(A) and is therefore exempt from Section 404 regulation.

Fish ponds

We are developing a General Permit authorizing discharges of dredged or fill material associated with the construction of levees and ditches for the construction of fish ponds in wetlands that were in agricultural crop production prior to December 23, 1985. A draft General Permit has been developed by the Vicksburg District, Army Corps of Engineers and should be issued by June 1, 1990. This General Permit should serve as a model permit for other areas of the country and this activity will be considered for a nationwide General Permit.

It should be made clear, however, that the Section 404(f) exemption for "normal farming activities" and the General Permit being developed for fish ponds apply only to the use of wetlands which are already in use for agricultural crop production. These provisions do not apply to 1) wetlands that were once in use for agricultural crop production but have lain idle so long that modifications to the hydrologic regime are necessary to resume crop production or, 2) the conversion of naturally vegetated wetlands to agriculture, such as the conversion of bottomland hardwood wetlands to agriculture.

Limitations of the Section 404(f) Exemptions

It should be emphasized that the use of Section 404(f) exemptions does not affect Section 404 jurisdiction. For example, the fact that an activity in wetlands is exempted as normal farming practices does not authorize the filling of the wetland for the construction of buildings without a Section 404 permit. Similarly, a Section 404 permit would be required for the discharge of dredged or fill material associated with draining a wetland area and converting it to dry land.

Enforcement

Given that the normal farming practices as described above are exempt from regulation under Section 404, neither EPA nor the Corps will initiate enforcement actions against farmers or other persons for engaging in such normal farming activities. Further, there will be no enforcement against actions that meet the description of activities covered by, and any conditions contained in, general permits issued by the Corps.

Conclusion

Proper implementation of the Section 404 program is an issue of extreme importance to the nation. We encourage you to distribute this memorandum not only to your staffs but to the public at large so that there will be a better general understanding of the program and how it operates. If you have any questions regarding this memorandum, please contact us or have your staff contact Suzanne Schwartz in EPA's Office of Wetlands Protection at 202-475-7799, or John Studt in the Headquarters' Office of the U.S. Army Corps of Engineers at 202-272-1785 (temporary number 202-272-1294).

LaJuana S. Wilcher
Assistant Administrator for Water
U.S. Environmental Protection Agency

Robert W. Page
Assistant Secretary of the Army
(Civil Works)

APPENDIX C

POTYLD PROGRAM

1. General Description
2. Description of Input Data

From: Modeling Reduced Water Yields into Webster Reservoir Due to Changing Land Use Practices, Michael W. Berry, Master's Thesis, Department of Civil Engineering, Kansas State University, Manhattan, Kansas.

CHAPTER 4

DESCRIPTION OF THE COMPUTER MODELS

To assess the impact of land use changes on the hydrology of the watershed, two digital computer models are used. The first program models the hydrology of the watershed and the water budget of a "typical" stockwater pond. The watershed area simulated in each run is broken down into subareas to represent the various land uses encountered. This Potential Yield Model (POTYLD) is an adaptation of the basic continuous simulation model developed at Kansas State University and described by Zovne and Koelliker (1979). Later work by Hayden (1979), Zovne (1980), and Im (1980) modified the original model further, adapting it to use in assessment of weather modification effects, design of systems for the land treatment of wastewater, evaluation and design of evaporative wastewater lagoons, and design of supplemental irrigation systems. The relevant portions of each of these models was retained and combined to produce the POTYLD model. A schematic diagram of the model is given in Figure 7.

The second computer program uses the precipitation excess information from POTYLD and annual land use information to calculate the depletions from the potential yield of the watershed. This program, called DEPLETE, determines how much of the depletions in water yield can be attributed to terraces, stubble-mulching, and to stockwater ponds.

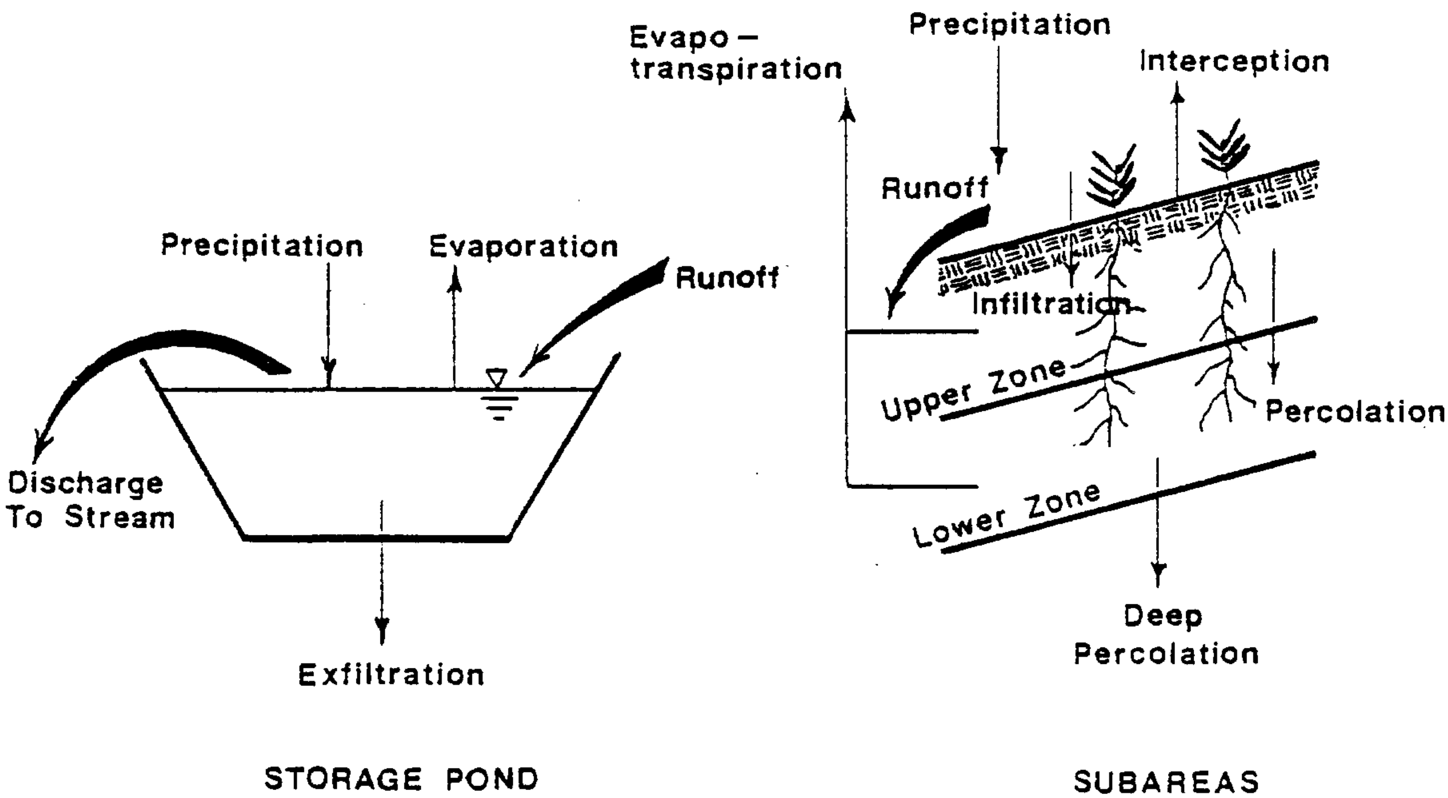

Figure 7. Modeling scheme used in POTYLD program. (Adapted from Zovne and Koelliker, 1979)

POTYLD Program

The basic elements of the POTYLD program have been previously described by Zovne and Koelliker (1979). A short summary of the model will be given here, with detailed explanations of the minor modifications made to the original model.

Potential Evapotranspiration

Potential evapotranspiration (PET) is calculated by the combined energy budget and mass transfer equation developed by Penman (1948) and modified by Jensen, et. al. (1971). This equation is of the form

$$PET = \frac{\Delta}{(\Delta + \gamma)} \cdot (R_n - G) + \frac{\gamma}{(\Delta + \gamma)} \cdot E_a \qquad (1)$$

where

PET = the potential evapotranspiration

Δ = slope of the saturation vapor pressure-temperature curve

γ = the psychrometric constant

R_n = daily heat budget at the surface

G = soil heat flux, and

E_a = a function of humidity and wind speed.

The inputs used by the computer model include daily values of maximum temperature, minimum temperature, and precipitation, and long-term monthly average values for relative humidity, wind speed, solar radiation, and percentage of possible sunshine. Geographical constants which must be calibrated for each location are also necessary (see Zovne and Koelliker, 1979).

Consumptive Use

The actual evapotranspiration for the various crop covers is calculated by means of the modified Blaney-Criddle method as described by the U. S. Soil Conservation Service (1967). The CROPCO subroutine calculates monthly crop coefficients (k) for calculation of consumptive use. Evapotranspiration occurs at the potential rate while the soil is wet, but as the soil dries, soil moisture limits the rate of evapotranspiration. Kanemasu (1975) has developed a simple relation to define the region where soil moisture limits the evapotranspiration rate. He defines the term K_s given by the relation

$$K_s = \frac{\theta_a}{(0.3 \cdot \theta_{max})} \qquad (2)$$

where

θ_a = actual available soil moisture

θ_{max} = maximum available soil moisture.

The value of K_s varies linearly from unity when the available soil moisture is greater than $0.3\theta_{max}$ to zero at the permanent wilting point. The consumptive use of the crop (AET) is then determined by the relation

$$AET = PET \times k \times K_s. \qquad (3)$$

Inputs required for this calculation include mean monthly average temperatures, crop types, and planting and harvesting dates.

Precipitation Excess

Surface runoff for each type of land use is calculated by the SCS method. This methodology uses runoff curve numbers (CN's) to describe the runoff characteristics of each soil-crop combination. In addition, the CN for any given precipitation event depends upon the antecedent moisture condition (AMC). The SCS equation takes the form

$$Q = \frac{(P - 0.2S)^2}{(P + 0.8S)} \qquad (4)$$

where

Q = calculated amount of precipitation excess

P = amount of precipitation

$S = \frac{1000}{CN} - 10$, the maximum potential difference between rainfall and runoff.

The initial abstraction term (IA=0.2S) takes into account surface storage, interception, and infiltration before precipitation excess begins. This IA term must be satisfied before runoff occurs.

A major change from the previous version of the model should be noted here. Previously, runoff curve numbers for AMC II were programmed into the model for any given soil and crop combination. Curve numbers for AMC I and AMC III were calculated by use of regression equations. This former method did not prove satisfactory for the purposes of this study. Application of conservation treatments cause a decrease in runoff curve number. To allow the programmer maximum flexibility to define the curve number for a particular region and practice, the curve numbers for AMC I, II, and III are inputs into the model for each type of land use, for both fallow and cropped land. Such flexibility allows the programmer to modify the curve numbers to reflect changing technology and changing practices in the field.

An additional change concerns the method by which runoff curve numbers for cropped and fallow areas are assigned. The model has been changed so that in a year in which wheat is being harvested, the assigned CN for wheat will apply throughout that calendar year. In a year in which the ground lies fallow during the summer and is planted in wheat in the fall, the fallow CN is assumed to apply throughout that calendar year. It is impractical to attempt to model the decreasing CN as the crop grows and matures, and subsequently the increase in CN as the residue cover deteriorates during the fallow period. Using the above approach, the sudden transition in CN occurs during the winter season when precipitation and the potential for runoff are usually low.

Soil Evaporation, Infiltration and Redistribution

As described by Zovne and Koelliker (1979), the model assumes a rooting depth of four feet for the crop, except where soil profile depth limitations occur. (See Fig. 8.) This growing zone is divided into two zones, the upper one foot of depth and remaining lower portion. Accounting of the soil moisture for each zone is maintained on a daily basis. As precipitation occurs, it is routed through the upper and then the lower zones. All water which percolates below the root zone is considered to be a loss to the surface water supply.

Soil evaporation occurs in two stages (Kanemasu, 1975), the first stage when the soil is wet and evaporation occurs at a constant rate equal to the evapotranspiration rate estimated for a bare soil surface. Second stage evaporation occurs when the hydraulic properties of the soil limit the evaporation rate. This stage occurs when the soil moisture falls below a threshold limit, U. The amount of evaporation for stage 2 can be calculated by the equation (see Ritchie, 1972)

$$E_2 = c't^{0.5} - c'(t - 1)^{0.5} \qquad (5)$$

where

E_2 = stage 2 evaporation amount

c' = hydraulic coefficient

t = time after stage 1 evaporation.

Field work by Kanemasu has provided the values of U and c' used in the determination of Stage 2 evaporation. This model uses the method described by Ritchie and by Kanemasu to estimate evaporation from a bare soil surface.

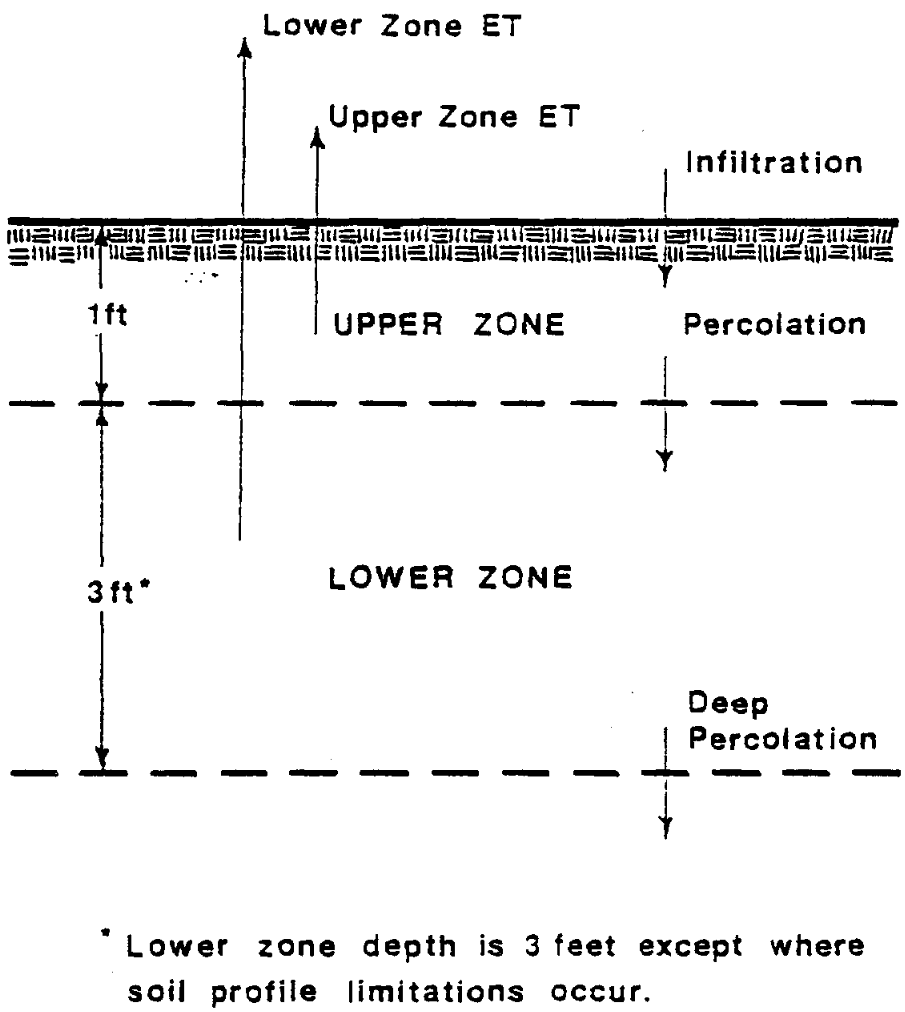

Figure 8. Illustration of soil moisture redistribution in the upper and lower zones of the soil profile (Adapted from Hayden, 1979)

Percolation and redistribution through the soil profile are handled by the procedure described by Zovne and Koelliker, which is a simplified form of the work by Saxton, et. al. (1974). In brief, the upper zone of the soil profile is allowed to drain to field capacity after two days, with the excess water percolated down to the lower zone. The lower zone is allowed to drain to 90% of field capacity when the time between recharges is greater than two days. Zovne and Koelliker report that this procedure results in reasonable estimates of vertical movement through the soil profile. The various soil moisture parameters used in the model are listed in Table 2, with a general description of the twelve SCS soil classes given in Table 3.

Moisture storage in the snowpack

Whenever precipitation occurs and the average daily temperature is 32^{o} F or below, the added moisture is stored in the snowpack. The SNOWRT subroutine calculates the additions and/or deductions from the snowpack each day. A detailed explanation of the method is given in Zovne and Koelliker. Snowmelt is calculated on the degree-day approach (see Gray, 1973, pp. 9.12-9.14). Snowmelt due to rain falling on the snowpack is calculated according to the relation used by Linsley (1943). Sublimation is calculated by the Penman combination equation, using an albedo of 70%. The only inputs required for this routine are daily maximum and minimum temperatures, and the daily precipitation amount.

Table 2: Soil moisture properties used in the model

(1) Irrigation soil class	(2) SCS soil group	(3) Soil profile depth ft	(4) Available water inches Upper* zone	(4) Available water inches Lower† zone	(5) Field capacity inches Upper zone	(5) Field capacity inches Lower zone	(6) Permanent wilting point inches Upper zone	(6) Permanent wilting point inches Lower zone	(7) Soil moisture at saturation inches Upper zone	(7) Soil moisture at saturation inches Lower zone	(8) Upper limit stage 2* evapor. U in.	(9) Empirical coeff. c' $in.day^{-1/2}$
1	D	3.0	2.6	2.7	4.6	9.4	2.0	6.7	5.8	11.8	0.47	0.20
2	D	3.0	1.5	2.9	4.4	9.4	2.9	6.5	6.2	11.5	0.47	0.20
3	C	5.0	2.5	5.7	4.5	14.5	2.0	8.5	5.7	16.3	0.39	0.18
4	C	2.5	2.4	2.5	4.6	7.0	2.2	4.5	5.7	8.2	0.39	0.18
5	B	5.0	2.5	6.7	4.5	13.9	2.0	7.2	5.7	15.8	0.39	0.18
6	B	3.0	2.6	4.2	4.3	9.1	1.7	4.9	5.5	10.4	0.39	0.18
7	B	5.0	2.4	6.6	4.0	13.7	1.6	7.1	5.4	15.4	0.35	0.16
8	B	2.5	2.4	3.3	4.0	6.8	1.6	3.5	5.4	7.7	0.35	0.16
9	B	5.0	2.4	5.2	3.8	9.2	1.4	4.0	5.3	13.9	0.31	0.14
10	B	5.0	2.2	4.1	3.5	7.0	1.3	2.9	5.2	13.2	0.31	0.14
11	B	5.0	1.5	4.1	2.3	7.0	0.8	2.9	4.8	13.2	0.28	0.13
12	B	5.0	1.0	2.5	1.7	4.3	0.7	1.8	4.8	12.9	0.24	0.13

* Upper zone thickness is 1 ft.

† Lower zone thickness is 3 ft except where soil profile depth limitations occur.

Table 3 : SCS Irrigation Soil Class descriptions.

Irrigation Soil Class	Profile Depth (ft.)	Soil Class Description
1	3'	Deep soils with silt loam or silty clay loam surface layers and slowly to very slowly permeable heavy clay and claypan subsoils.
2	3'	Deep soils with silty clay or clay textures throughout. Surface infiltration and subsoil premeability are very slow when the soil is moist. Shrinkage from drying causes extensive cracking, resulting in high infiltration rates until swelling occurs.
3	5'	Deep soils with silt loam, loam, clay loam, or silty clay loam surface layers and clay loam, silty clay loam, or silty clay subsoils. Subsoil permeability is slow to moderately slow. Shrinkage cracks resulting from drying in the soils with more clayey subsoil textures give a relatively high initial infiltration rate.
4	2.5'	Moderately deep soils with silt loam, clay loam, or silty clay loam surface layers and clay loam or silty clay subsoils with predominately moderately slow permeability.
5	5'	Deep soils with silt loam, loam, clay loam, or silty clay loam surface layers and subsoils. Subsoil permeability: moderate to moderately slow.
6	3'	Moderately deep soils with silt loam or loam surface layers and loam, clay loam, or silty clay loam subsoils with moderate to moderately slow permeability.
7	5'	Deep soils with silt loam, loam or very fine sandy loam surface layers and moderately permeable, medium textures subsoils.
8	2.5'	Moderately deep soils with silt loam, loam or very fine sandy loam surface layers and moderately permeable clay loam, loam, or silt loam subsoils.

Table 3: (Continued) SCS Irrigation Soil Class descriptions.

9	5'	Deep soils with fine sandy loam and loam surface layers and subsoils that have moderately rapid permeability. Available water capacity is moderate to low.
10	5'	Soils are moderately deep over sand with sandy loam to loam surface layers and moderately rapid to rapidly permeable subsoils with low available water capacity.
11	5'	Deep soils with loam fine sand or loamy sand surface layers and moderately rapid to rapidly permeable subsoils.
12	5'	Deep rapidly permeable soils with sand or fine sand textures throughout.

Source: USDA, Soil Conservation Service. 1975. Kansas irrigation guide and irrigation planner's handbook. Salina, KS. pp. 3-7 to 3-18.

Modeling a Typical Pond

The original hydrologic model developed by Zovne and Koelliker contained a routine which modeled the daily budget of a waste treatment lagoon. This routine has remained essentially intact, but is now used to model the daily budget of stockwater ponds. Given an average pond watershed, the runoff which flows into the pond is calculated. Daily calculations for the pond include evaporation, exfiltration, direct precipitation, and runoff. The sum of daily discharges from the pond is the predicted yield from a pond watershed.

The pond is modeled as the inverted frustrum of a pyramid, with base width and length, side slopes, and maximum height as inputs. A major change from the previous form of the model is that a pond exfiltration subroutine developed by Im (1980) has been added. Exfiltration is assumed to occur at a constant rate expressed as inches of depth per day. This rate is multiplied by the surface area of the pond to determine the volume of exfiltrated water each day.

Output from POTYLD program

Output from the POTYLD program consists of summaries of the pond's water budget and an accounting of the soil moisture for each subarea. These summaries can be printed on either a monthly or an annual basis, which is a minor modification from the previous versions of the model. In addition, in order to work in tandem with the DEPLETE program, annual values of precipitation

TABLE D1: DESCRIPTION OF INPUT DATA FOR POTYLD PROGRAM

1. Program identifier literal fields. Punch alphanumeric information exactly as desired on printout.

2. Subarea and pond parameters

NAMELIST/ALPHA

BRUNTA, BRUNTB : Coefficients for Penman equation based on geographical location	
E : Wind coefficient in Penman equation for calculating potential evapotranspiration	Usually 0.75
OUTPUT : Code for type of printout	1 : Print annual values in pond and subarea accounts 2 : Print monthly values in pond and subarea accounts 3 : Print annual values and punch cards for DEPLETE 4 : Print monthly values and punch cards for DEPLETE
RCROP : Reflectance coefficient for cropped areas	Ranges from 0.20 to 0.25 Usually 0.23

Location	BRUNTA	BRUNTB	LOCATION	BRUNTA	BRUNTB
Belleville	0.62	0.039	Hays	0.78	0.035
Chanute	0.62	0.039	Hill City	0.79	0.035
Colby	0.81	0.034	Hoxie	0.82	0.034
Dodge City	0.79	0.034	Horton	0.62	0.042
Fort Scott	0.66	0.041	Independence	0.67	0.043
Garden City	0.80	0.034	Topeka	0.66	0.041
Goodland	0.75	0.036			

NAMELIST/BETA	
DSEPRT : Daily exfiltration rate for pond in inches/day	Range from 0.0625 to 0.25 (1/16 - 1/4) in/day
HMAX : Maximum depth in pond in feet	
L : Length of pond base in feet	
NPLOTS : Number of subareas used in simulation	
S : Side slope ~~of pond (ft/ft) expressed~~ as run:rise	
W : Width of pond base in feet	

NAMELIST/OMEGA

INDST : Station index number

MSTART : Month in which simulation begins (expressed as numeral between 1 and 12)

STORM : 25-year, 24-hour storm (inches)

YEND : Year in which simulation ends

YSTART : Year in which simulation begins

Location	INDST	YSTART*	YEND*	STORM
Belleville	0682	1949	1973	5.1
Chanute	1427	1949	1979	6.7
Colby	1699	1900	1978	4.5
Dodge City	2164	1949	1973	4.6
Ellsworth	2459	1905	1970	5.4
Fort Scott	2835	1948	1979	6.6
Garden City	2980	1912	1974	4.5
Goodland	3153	1949	1973	4.3
Hays	3527	1948	1973	4.7
Hill City	3660	1920	1979	4.6
Hoxie	3837	1939	1978	4.5
Horton	3810	1900	1979	5.9
Independence	3954	1900	1979	6.7
Topeka	8167	1949	1978	6.1

* Length of record available at KSU. Any simulation period within these years may be run.

3. Monthly meteorological data

PSUNS : Long-term average percentage of sunshine (%)
RHD : Long-term average relative humidity (%)
WIND : Long-term average wind speed (mi/hr)
RA : Mid-monthly intensity of solar radiation (mm/day)
MMAT : Mean monthly air temperature (°F)

Location	Month	PSUNS	RHD	RA	WIND	MMAT
Colby	Jan.	0.68	76	6.16	12.4	25.8
	Feb.	0.63	79	8.44	12.5	30.2
	Mar.	0.66	78	11.11	14.4	36.5
	Apr.	0.64	78	13.96	14.1	47.2
	May	0.66	83	15.91	13.6	58.1
	June	0.75	79	16.69	12.9	68.5
	July	0.78	80	16.29	11.9	75.6
	Aug.	0.78	82	14.83	11.5	73.9
	Sep.	0.77	74	12.28	11.9	64.6
	Oct.	0.75	75	9.43	11.6	52.1
	Nov.	0.70	76	6.85	11.9	37.5
	Dec.	0.68	76	5.65	11.3	28.6
Hill City	Jan.	0.66	77	6.16	13.0	28.0
	Feb.	0.63	79	8.44	13.2	32.6
	Mar.	0.66	77	11.11	15.0	39.8
	Apr.	0.64	78	13.96	14.8	51.0
	May	0.66	82	15.91	14.2	60.9
	June	0.75	80	16.69	13.5	71.4
	July	0.79	78	16.29	12.2	78.0
	Aug.	0.78	82	14.83	12.0	76.4
	Sep.	0.78	74	12.28	12.6	67.5
	Oct.	0.74	76	9.43	12.4	55.4
	Nov.	0.70	76	6.85	12.6	40.4
	Dec.	0.63	77	5.65	13.0	31.1
Hoxie	Jan.	0.66	77	6.16	13.0	28.0
	Feb.	0.63	70	8.44	13.2	32.6
	Mar.	0.66	77	11.11	15.0	39.8
	Apr.	0.64	78	13.96	14.8	51.0
	May	0.66	82	15.91	14.2	60.9
	June	0.75	80	16.60	13.5	71.4
	July	0.79	78	16.29	12.2	78.0
	Aug.	0.78	82	14.83	12.0	76.4
	Sep.	0.78	74	12.28	12.6	67.5
	Oct.	0.74	76	9.43	12.4	55.4
	Nov.	0.70	76	6.85	12.6	40.4
	Dec.	0.68	77	5.65	13.0	31.1

4. Subarea parameters

ISOIL : SCS irrigation soil class	
ICROP : Crop code	1 : wheat 2 : sorgnum 3 : corn 4 : soybeans 5 : pasture 6 : alfalfa 7 : fallow
AREA : Area of pond watershed represented by subarea (acres)	
RCNI, RCNII, RCNIII : Runoff curve numbers for cropped area for AMC I, II, and III	
MGSBP : Month growing season begins	1 to 12
DGSBP : Day of month growing season begins	
MGSEP : Month growing season ends	1 to 12
DGSEP : Day of month growing season ~~begins~~ ends	
ROTATE : Indicator for wheat/fallow rotation	1 : no rotation 2 : fallow in first year 3 : wheat in first year
POND : Indicator for subarea which represents part of pond watershed	1 : subarea does not drain into pond 2 : subarea drains into pond

TERR : Indicator for subarea with terraces	1. no terraces 2. terraces
MUL : Indicator for stubble mulch practice	1. no stubble mulch 2. stubble mulch
FLRCNI, FLRCN2, FLRCN3 : Runoff curve number for fallow areas for AMC I, II, and III	

5. Daily meteorological data

KAN : 2-digit state code
STIND : 4-digit state code
YEAR : year (last two digits)
MONTH : month
PREC : 31 values of daily precipitation
TMAX : 31 values of maximum daily temperature
TMIN : 31 values of minimum daily temperature

POTYLD PROGRAM

1. Input Data for Ackerly-Knott Area Simulation (1944-1988)
2. Annual Summary (Note: only the 1944 Annual Summary is included herein for example)
3. Final Summary (Averages of moisture accounts for the simulation period)

Ackerly Area
Pond Vol = 4476 af
(Alternative #1)

Simulation Period 1944 thru 1988

MARTIN COUNTY TX

LEVEL,OPEN END

0.75	0.033	0.75	2.2	0.23	
0.0625	20.00	1500.	75.	1500.	
5158	1	1988	1944	2	2
JAN	0.68	55.	8.0	10.3	44.
FEB	0.70	52.	10.1	10.3	47.
MAR	0.73	42.	12.3	13.8	54.
APR	0.70	45.	14.6	13.8	64.
MAY	0.75	50.	16.0	13.8	74.
JUN	0.83	50.	16.5	11.2	80.
JUL	0.79	50.	16.2	11.2	82.
AUG	0.78	50.	15.2	11.2	82.
SEP	0.75	52.	13.2	8.0	74.
OCT	0.75	52.	10.9	8.0	64.
NOV	0.75	52.	8.6	8.0	51.
DEC	0.65	50.	7.5	10.3	45.

CN 11 2 15489 52. 71. 86. 4 20 9 30 1 2 2 2
PS 11 5 5163. 41. 61. 78. 1 1 12 31 1 2 1 1

DUMP OF INPUT VALUES

MARTIN COUNTY TX

.7500	.0330	.7500	2.2000	.2300	
.0625	20.0000	1500.0000	75.0000	1500.0000	
5158	1	1988	1944	2	2
	.68	55.	8.00	10.3	44.0
	.70	52.	10.10	10.3	47.0
	.73	42.	12.30	13.8	54.0
	.70	45.	14.60	13.8	64.0
	.75	50.	16.00	13.8	74.0
	.83	50.	16.50	11.2	80.0
	.79	50.	16.20	11.2	82.0
	.78	50.	15.20	11.2	82.0
	.75	52.	13.20	8.0	74.0
	.75	52.	10.90	8.0	64.0
	.75	52.	8.60	8.0	51.0
	.65	50.	7.50	10.3	45.0

11 2 ***** 52. 71. 86. 4 20 9 30 1 2 2 2 0. 0. 0.
11 5 5163. 41. 61. 78. 1 1 12 31 1 2 1 1 0. 0. 0.

STATION: MARTNTY 1944 TO 1988

SIZE OF CRITICAL EVENT: 2.20 INCHES

POND VARIABLES:

(A) BASE DIMENSIONS-- 1500.00 FEET BY1500.00 FEET

(B) SIDE SLOPE-- RUN:RISE = 75. : 1

(C) MAXIMUM DEPTH-- 20.00 FEET

(D) MAXIMUM POND VOLUME-- 53719.01 ACRE-INCHES 4476 af

(E) MAXIMUM POND SURFACE AREA-- 464.88 ACRES

(F) DAILY SEEPAGE RATE-- .06250 INCHES/DAY

(G) DRAINAGE AREA-- 20652.00 ACRES

AREA VARIABLES:

SUBAREA 1

(A) AREA-- ****** 15,489 ACRES

(B) CROP-- COTTON

(C) SOIL TYPE-- 11 (SCS SOIL TYPE)

(D) CONSERVATION PRACTICES-- FLOW INTO POND TERRACES--LEVEL,OPEN END STUBBLE MULCHED

(E) RUNOFF CURVE NUMBERS: ANTECEDENT MOISTURE CONDITION I 52.

ANTECEDENT MOISTURE CONDITION II 71.

ANTECEDENT MOISTURE CONDITION III 86.

SUBAREA 2

(A) AREA-- ****** 5163 ACRES

(B) CROP-- PASTUR E

(C) SOIL TYPE-- 11 (SCS SOIL TYPE)

(D) CONSERVATION PRACTICES-- FLOW INTO POND TERRACES--NONE

(E) RUNOFF CURVE NUMBERS: ANTECEDENT MOISTURE CONDITION I 41.

ANTECEDENT MOISTURE CONDITION II 61.

ANTECEDENT MOISTURE CONDITION III 78.

**** ANNUAL SUMMARY ****

9/25/44 CRITICAL EVENT EXCEEDED 2.25 INCH STORM

WATER ACCOUNT FOR THE POND IN ACRE-INCHES - 1944

	INFLOWS		OUTFLOWS				
MONTH	PRECIPITATION	PRECIP. EXCESS	SURFACE EVAP.	EXFILTRATION	DISCHARGE	VOL. CHANGE	HEIGHT
JAN.	67.3	1359.5	175.0	124.2	.0	1127.5	1.58
FEB.	116.1	32.1	256.9	122.4	.0	-231.1	1.29
MAR.	.0	.0	364.1	120.2	.0	-484.4	.64
APR.	.0	.0	328.1	84.0	.0	-412.0	.02
MAY	80.9	.0	70.6	10.3	.0	.0	.00
JUNE	44.0	.0	44.0	.0	.0	.0	.01
JULY	31.1	.0	27.8	3.3	.0	.0	.02
AUG.	36.8	.0	36.8	.0	.0	.0	.02
SEPT	161.4	262.2	94.1	27.7	.0	301.8	.49
OCT.	24.8	.0	238.3	88.3	.0	-301.8	.00
NOV.	117.4	290.7	84.8	53.2	.0	270.2	.43
DEC.	69.5	.0	138.7	105.8	.0	-175.0	.16
TOT.	749.2	1944.5	1859.2	739.3	.0	95.2	.16

SNOW MOISTURE INFORMATION:

MOISTURE STORED IN SNOW PACK ON DEC. 31--- .00 CHANGE IN SNOW STORAGE DURING 1944--- .00

CHANGE IN SOIL MOISTURE = (INPUTS) - (OUTPUTS) - (CHANGE IN SNOW STORAGE)

SUBAREA NO. 1

AREA-- 15489. ACRES SOIL TYPE--11 CROP--COTTON RUNOFF CURVE NUMBERS: AMCI--52. AMCII--71. AMCIII--86.
FLOW INTO POND TERRACES--LEVEL,OPEN END STUBBLE MULCHED
WATER BALANCE (INCHES) IN THE SUBAREA - 1944

	INPUTS	OUTPUTS					
MONTH	PRECIPITATION	INTERCEPTION	PRECIP. EXCESS	PERCOLATION	AET	CHANGE IN SM	SOIL MOISTURE
JAN.	1.16	.20	.09	4.29	1.17	-4.60	8.00
FEB.	1.73	.50	.00	.13	.95	.15	8.15
MAR.	.00	.00	.00	.00	.37	-.37	7.78
APR.	.00	.00	.00	.00	.61	-.61	7.18
MAY	1.56	.30	.00	.00	3.68	-2.42	4.75
JUNE	.85	.40	.00	.00	1.41	-.96	3.79
JULY	.60	.10	.00	.00	.58	-.08	3.70
AUG.	.71	.40	.00	.00	.21	.10	3.80
SEPT	3.12	.20	.02	.00	1.31	1.59	5.40
OCT.	.44	.10	.00	.00	1.00	-.66	4.74
NOV.	2.25	.50	.02	.00	1.01	.72	5.46
DEC.	1.28	.30	.00	.00	.82	.16	5.62
TOT.	13.70	3.00	.13	4.42	13.14	-6.98	5.62

SUBAREA NO. 2

AREA-- 5163. ACRES SOIL TYPE--11 CROP--PASTUR E RUNOFF CURVE NUMBERS: AMCI--41. AMCII--61. AMCIII--78.
FLOW INTO POND TERRACES--NONE
WATER BALANCE (INCHES) IN THE SUBAREA - 1944

	INPUTS	OUTPUTS					
MONTH	PRECIPITATION	INTERCEPTION	PRECIP. EXCESS	PERCOLATION	AET	CHANGE IN SM	SOIL MOISTURE
JAN.	1.16	.20	.00	4.59	.58	-4.20	8.40
FEB.	1.73	.50	.00	.31	1.01	-.09	8.31
MAR.	.00	.00	.00	.00	2.48	-2.48	5.83
APR.	.00	.00	.00	.00	1.66	-1.66	4.17
MAY	1.56	.30	.00	.00	1.59	-.33	3.84
JUNE	.85	.40	.00	.00	.57	-.12	3.72
JULY	.60	.10	.00	.00	.52	-.02	3.70
AUG.	.71	.40	.00	.00	.21	.10	3.80
SEPT	3.12	.20	.00	.00	1.51	1.41	5.21
OCT.	.44	.10	.00	.00	1.56	-1.22	3.99
NOV.	2.25	.50	.00	.00	.47	1.28	5.27
DEC.	1.28	.30	.00	.00	.54	.44	5.70
TOT.	13.70	3.00	.00	4.90	12.70	-6.90	5.70

	INFLOWS		OUTFLOWS				
MONTH	PRECIPITATION	PRECIP. EXCESS	SURFACE EVAP.	EXFILTRATION	DISCHARGE	VOL. CHANGE	HEIGHT
JAN.	61.4	284.2	133.6	85.4	.0	126.7	.36
FEB.	24.9	.0	165.6	81.2	.0	-221.8	.01
MAR.	45.5	.0	.0	.0	.0	45.5	.01
APR.	21.3	.0	56.2	10.6	.0	-45.5	.01
MAY	9.3	.0	9.3	.0	.0	.0	.02
JUNE	68.4	.0	58.5	9.8	.0	.0	.01
JULY	343.6	.0	290.9	52.7	.0	.0	.02
AUG.	63.8	.0	59.2	4.5	.0	.0	.03
SEPT	168.4	225.4	38.1	10.4	.0	345.3	.54
OCT.	232.3	3312.0	453.3	179.8	.0	2911.2	3.73
NOV.	33.3	.0	322.4	176.8	.0	-465.9	3.31
DEC.	54.5	.0	232.0	173.4	.0	-350.8	2.98
TOT.	1126.8	3821.6	1819.2	784.5	.0	2344.6	2.98

SNOW MOISTURE INFORMATION:

MOISTURE STORED IN SNOW PACK ON DEC. 31--- .00 CHANGE IN SNOW STORAGE DURING 1945--- .00

CHANGE IN SOIL MOISTURE = (INPUTS) - (OUTPUTS) - (CHANGE IN SNOW STORAGE)

***** FINAL SUMMARY *****

METEOROLOGICAL SUMMARY

STATION: MARTNTY 1944 TO 1988 45 TOTAL YEARS

AVERAGE ANNUAL LAKE EVAPORATION= 73.28 INCHES

AVERAGE ANNUAL PRECIPITATION= 16.82 INCHES

PRECIPITATION RANGE= 36.12 INCHES (FROM A LOW OF 5.29 INCHES TO A HIGH OF 41.41 INCHES)

AVERAGE MOISTURE DEFICIT= 56.46 INCHES

SUMMARY OF POND OPERATIONS

NUMBER OF YEARS HAVING A DISCHARGE = 1

AVERAGE NUMBER OF DISCHARGES PER YEAR HAVING A DISCHARGE = 6.00

AVERAGE DAILY DISCHARGE VOLUME = 4099.13 ACRE-INCHES

MAXIMUM DAILY DISCHARGE VOLUME = 15430.47 ACRE-INCHES

AVERAGE DISCHARGE VOLUME PER YEAR HAVING A DISCHARGE = 24594.80 ACRE-INCHES

TOTAL DISCHARGE VOLUME= 24594.80 ACRE-INCHES

AVERAGE ANNUAL DIRECT PRECIPITATION VOLUME= 1784.20 ACRE-INCHES

AVERAGE ANNUAL PRECIPITATION EXCESS VOLUME FLOWING INTO POND= 6302.11 ACRE-INCHES

AVERAGE ANNUAL EVAPORATION VOLUME= 5526.52 ACRE-INCHES

AVERAGE ANNUAL EXFILTRATION= 1795.10 ACRE-INCHES

Total loss 7321 ai
O-A 1/3 2440 ai
M-S 2/3 4880 ai

AVERAGE ANNUAL DISCHARGE VOLUME = 546.55 ACRE-INCHES

SUMMARY OF WATERSHED SUBAREAS

SUBAREA NO. 1

AVERAGE ANNUAL PRECIPITATION EXCESS = .39 INCHES

AVERAGE ANNUAL PERCOLATION = .67 INCHES

AVERAGE ANNUAL INTERCEPTION = 3.23 INCHES

AVERAGE ANNUAL EVAPOTRANSPIRATION = 12.68 INCHES

AVERAGE ANNUAL CHANGE IN SOIL MOISTURE = -.14 INCHES

SUBAREA NO. 2

AVERAGE ANNUAL PRECIPITATION EXCESS = .07 INCHES

AVERAGE ANNUAL PERCOLATION = .49 INCHES

AVERAGE ANNUAL INTERCEPTION = 3.23 INCHES

AVERAGE ANNUAL EVAPOTRANSPIRATION = 13.21 INCHES

AVERAGE ANNUAL CHANGE IN SOIL MOISTURE = -.18 INCHES

SUMMARY OF STATISTICAL DATA

PRECIPITATION FREQUENCY DATA

INTENSITY (IN.)	FREQUENCY (%)	FREQUENCY (DAYS)	RUNOFF FREQ. (DAYS)
>0.0	100.00	1757.00	107.00
>0.1	68.13	1197.00	107.00
>0.2	54.98	966.00	107.00
>0.3	43.77	769.00	107.00
>0.4	34.26	602.00	102.00
>0.5	28.51	501.00	99.00
>0.6	23.51	413.00	94.00
>0.7	19.24	338.00	90.00
>0.8	15.08	265.00	88.00
>0.9	13.03	229.00	80.00
>1.0	10.87	191.00	68.00
>1.1	9.05	159.00	66.00
>1.2	8.03	141.00	61.00
>1.3	6.60	116.00	57.00
>1.4	5.58	98.00	56.00
>1.5	4.61	81.00	55.00
>1.6	3.76	66.00	51.00
>1.7	3.53	62.00	50.00
>1.8	2.79	49.00	48.00
>1.9	2.79	49.00	48.00
>2.0	2.56	45.00	44.00
>3.0	.57	10.00	10.00
>4.0	.17	3.00	3.00
>5.0	.11	2.00	2.00
>10.	.00	.00	.00

RUNOFF FREQUENCY DATA

INTENSITY	FREQUENCY (%)				FREQUENCY (DAYS)			
(IN.)	PLOT 1	PLOT 2	PLOT 3	PLOT 4	PLOT 1	PLOT 2	PLOT 3	PLOT 4
>0.0	100.00	100.00	.00	.00	110.00	17.00	.00	.00
>0.1	30.00	29.41	.00	.00	33.00	5.00	.00	.00
>0.2	14.55	23.53	.00	.00	16.00	4.00	.00	.00
>0.3	12.73	23.53	.00	.00	14.00	4.00	.00	.00
>0.4	10.00	11.76	.00	.00	11.00	2.00	.00	.00
>0.5	9.09	11.76	.00	.00	10.00	2.00	.00	.00
>0.6	8.18	11.76	.00	.00	9.00	2.00	.00	.00
>0.7	7.27	5.88	.00	.00	8.00	1.00	.00	.00
>0.8	7.27	5.88	.00	.00	8.00	1.00	.00	.00
>0.9	6.36	5.88	.00	.00	7.00	1.00	.00	.00
>1.0	5.45	5.88	.00	.00	6.00	1.00	.00	.00
>1.1	3.64	.00	.00	.00	4.00	.00	.00	.00
>1.2	2.73	.00	.00	.00	3.00	.00	.00	.00
>1.3	2.73	.00	.00	.00	3.00	.00	.00	.00
>1.4	1.82	.00	.00	.00	2.00	.00	.00	.00
>1.5	1.82	.00	.00	.00	2.00	.00	.00	.00
>1.6	1.82	.00	.00	.00	2.00	.00	.00	.00
>1.7	.91	.00	.00	.00	1.00	.00	.00	.00
>1.8	.91	.00	.00	.00	1.00	.00	.00	.00
>1.9	.91	.00	.00	.00	1.00	.00	.00	.00
>2.0	.91	.00	.00	.00	1.00	.00	.00	.00
>3.0	.00	.00	.00	.00	.00	.00	.00	.00
>4.0	.00	.00	.00	.00	.00	.00	.00	.00
>5.0	.00	.00	.00	.00	.00	.00	.00	.00
>10.	.00	.00	.00	.00	.00	.00	.00	.00

S

APPENDIX D

```
EC1 S/N: 1090525070        HMVersion: 5.20    Data File: SSDRAW.HC1


 ****************************************                                   ****************************************
 *                                      *                                   *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                   *   U.S. ARMY CORPS OF ENGINEERS       *
 *             FEBRUARY 1981            *                                   *  THE HYDROLOGIC ENGINEERING CENTER   *
 *           REVISED 02 AUG 88          *                                   *          609 SECOND STREET           *
 *                                      *                                   *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE  09/13/1990  TIME  12:58:23 *                                  *                                      *
 *                                      *                                   *                                      *
 ****************************************                                   ****************************************




                                                X     X XXXXXXX  XXXXX           X
                                                X     X X        X     X        XX
                                                X     X X        X               X
                                                XXXXXXX XXXX     X       XXXXX   X
                                                X     X X        X               X
                                                X     X X        X     X         X
                                                X     X XXXXXXX  XXXXX          XXX



                                             :::::::::::::::::::::::::::::::::::::::::
                                             :::::::::::::::::::::::::::::::::::::::::
                                             :::                                   :::
                                             :::  Full Microcomputer Implementation :::
                                             :::                by                 :::
                                             :::        Haestad Methods, Inc.      :::
                                             :::                                   :::
                                             :::::::::::::::::::::::::::::::::::::::::
                                             :::::::::::::::::::::::::::::::::::::::::

                                 37 Brookside Road * Waterbury, Connecticut  06708 * (203) 755-1666



            THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

            THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
            THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
            NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
            DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL    LOSS RATE:GREEN AND AMPT INFILTRATION
            KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM
```

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LINE      ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

          ID    MARTIN COUNTY FLOOD CONTROL STUDY       JOB NO. 06901-001-036
          ID    HYDROLOGIC ANALYSIS OF SULPHUR SPRINGS DRAW WATERSHED FOR
          ID    10-YR, 25-YR, 50-YR, 100-YR AND PMP STORMS.
          ID
          ID
          IT      60                     300
          IO       5       0
          JP       5

          KK  UP-STH
          KM          COMPUTE RUNOFF HYDROGRAPH FOR UPPER SULPHUR SPRINGS DRAW SOUTH
          KM          SUBBASIN.
          KP       1
          KM            PLAN 1: 10-YR STORM
          PH      10   380.9    0.51    1.07    2.10    2.30    2.50    3.00    3.40    4.00
          PH    5.10    5.65
          BA   150.4
          LS       0      74
          UD    28.5
          KP       2
          KM            PLAN 2: 25-YR STORM
          PH       4   380.9    0.60    1.28    2.56    2.70    2.90    3.30    4.00    4.40
          PH    5.85    6.40
          KP       3
          KM            PLAN 3: 50-YR STORM
          PH       2   380.9    0.68    1.44    2.90    3.10    3.30    4.00    4.40    5.00
          PH    6.70    7.40
          KP       4
          KM            PLAN 4: 100-YR STORM
          PH       1   380.9    0.75    1.60    3.25    3.50    3.60    4.30    5.00    5.80
          PH    7.60    8.45
          KP       5
          KM            PLAN 5: PROBABLE MAXIMUM STORM
          IN      30
          PI   0.034   0.034   0.034   0.034   0.034   0.034   0.034   0.034   0.034   0.034
          PI   0.034   0.034   0.042   0.042   0.042   0.042   0.042   0.042   0.042   0.042
          PI   0.042   0.042   0.042   0.042   0.053   0.053   0.053   0.053   0.053   0.053
          PI   0.053   0.053   0.053   0.053   0.053   0.053   0.072   0.072   0.072   0.072
          PI   0.072   0.072   0.072   0.072   0.072   0.072   0.072   0.072   0.101   0.103
          PI   0.105   0.108   0.110   0.113   0.116   0.119   0.122   0.126   0.130   0.134
          PI   0.214   0.224   0.235   0.247   0.260   0.274   0.289   0.306   0.324   0.343
          PI   0.363   0.384   0.451   0.626   0.722   0.852   0.971   1.722   2.444   1.136
          PI   0.968   0.741   0.684   0.548   0.205   0.196   0.187   0.179   0.171   0.164
          PI   0.158   0.153   0.148   0.144   0.140   0.137   0.089   0.089   0.089   0.089
          PI   0.089   0.089   0.089   0.089   0.089   0.089   0.089   0.089   0.061   0.061
          PI   0.061   0.061   0.061   0.061   0.061   0.061   0.061   0.061   0.061   0.061
          PI   0.046   0.046   0.046   0.046   0.046   0.046   0.046   0.046   0.046   0.046
          PI   0.046   0.046   0.038   0.038   0.038   0.038   0.038   0.038   0.038   0.038
          PI   0.038   0.038   0.038   0.038
          BA   150.4
          LS       0      88
          UD    28.5
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

              KK  UP-NTH
              KM        COMPUTE RUNOFF HYDROGRAPH FRO UPPER SULPHUR SPRINGS DRAW NORTH
              KM        SUBBASIN
              KP       1
              KM         PLAN 1: 10-YR STORM
              PH      10   380.9    0.51    1.07    2.10    2.30    2.50    3.00    3.40    4.00
              PH    5.10    5.65
              BA   141.3
              LS       0      74
              UD    27.8
              KP       2
              KM         PLAN 2: 25-YR STORM
              PH       4   380.9    0.60    1.28    2.56    2.70    2.90    3.30    4.00    4.40
              PH    5.85    6.40
              KP       3
              KM         PLAN 3: 50-YR STORM
              PH       2   380.9    0.68    1.44    2.90    3.10    3.30    4.00    4.40    5.00
              PH    6.70    7.40
              KP       4
              KM         PLAN 4: 100-YR STORM
              PH       1   380.9    0.75    1.60    3.25    3.50    3.60    4.30    5.00    5.80
              PH    7.60    8.45
              KP       5
              KM         PLAN 5: PROBABLE MAXIMUM STORM
              IN      30
              PI   0.035   0.035   0.035   0.035   0.035   0.035   0.035   0.035   0.035   0.035
              PI   0.035   0.035   0.042   0.042   0.042   0.042   0.042   0.042   0.042   0.042
              PI   0.042   0.042   0.042   0.042   0.054   0.054   0.054   0.054   0.054   0.054
              PI   0.054   0.054   0.054   0.054   0.054   0.054   0.074   0.074   0.074   0.074
              PI   0.074   0.074   0.074   0.074   0.074   0.074   0.074   0.074   0.103   0.105
              PI   0.107   0.109   0.112   0.115   0.118   0.121   0.125   0.128   0.132   0.137
              PI   0.221   0.231   0.243   0.255   0.269   0.285   0.301   0.319   0.338   0.359
              PI   0.381   0.404   0.477   0.672   0.779   0.925   1.056   1.931   2.776   1.245
              PI   1.056   0.800   0.737   0.586   0.211   0.201   0.192   0.183   0.175   0.168
              PI   0.162   0.156   0.151   0.147   0.143   0.140   0.091   0.091   0.091   0.091
              PI   0.091   0.091   0.091   0.091   0.091   0.091   0.091   0.091   0.062   0.062
              PI   0.062   0.062   0.062   0.062   0.062   0.062   0.062   0.062   0.062   0.062
              PI   0.047   0.047   0.047   0.047   0.047   0.047   0.047   0.047   0.047   0.047
              PI   0.047   0.047   0.038   0.038   0.038   0.038   0.038   0.038   0.038   0.038
              PI   0.038   0.038   0.038   0.038
              BA   141.3
              LS       0      88
              UD    27.8

              KK   UPPER
              KM        COMBINE HYDROGRAPHS AT CONFLUENCE
              HC       2

              KK  ROUTE2
              KM        ROUTE COMBINED HYDROGRAPHS TO CONFLUENCE (138,000 FEET)
              RM      19    15.3     0.2
```

```
ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

KK  PLAINS
KM        COMPUTE RUNOFF HYDROGRAPH FOR SUBBASIN CONTAINING PLAINS, TX
KP       1
KM         PLAN 1: 10-YR STORM
PH      10   380.9    0.56    1.14    2.15    2.50    2.70    3.20    3.70    4.30
PH    5.10    5.65
BA   133.9
LS     6.0      74
UD    28.8
KP       2
KM         PLAN 2: 25-YR STORM
PH       4   380.9    0.65    1.35    2.58    2.80    3.10    3.60    4.40    4.90
PH    5.85    6.40
KP       3
KM         PLAN 3: 50-YR STORM
PH       2   380.9    0.72    1.52    2.92    3.30    3.60    4.20    4.90    5.60
PH    6.70    7.40
KP       4
KM         PLAN 4: 100-YR STORM
PH       1   380.9    0.80    1.68    3.25    3.70    4.00    4.80    5.40    6.30
PH    7.60    8.45
KP       5
KM         PLAN 5: PROBABLE MAXIMUM STORM
IN      30
PI   0.035   0.035   0.035   0.035   0.035   0.035   0.035   0.035   0.035   0.035
PI   0.035   0.035   0.043   0.043   0.043   0.043   0.043   0.043   0.043   0.043
PI   0.043   0.043   0.043   0.043   0.054   0.054   0.054   0.054   0.054   0.054
PI   0.054   0.054   0.054   0.054   0.054   0.054   0.075   0.075   0.075   0.075
PI   0.075   0.075   0.075   0.075   0.075   0.075   0.075   0.075   0.104   0.106
PI   0.108   0.111   0.113   0.116   0.119   0.122   0.126   0.130   0.134   0.138
PI   0.225   0.236   0.248   0.261   0.276   0.292   0.309   0.328   0.349   0.370
PI   0.394   0.418   0.498   0.710   0.826   0.985   1.126   2.097   3.041   1.333
PI   1.127   0.848   0.780   0.616   0.215   0.205   0.195   0.186   0.178   0.170
PI   0.164   0.158   0.153   0.148   0.145   0.142   0.092   0.092   0.092   0.092
PI   0.092   0.092   0.092   0.092   0.092   0.092   0.092   0.092   0.063   0.063
PI   0.063   0.063   0.063   0.063   0.063   0.063   0.063   0.063   0.063   0.063
PI   0.048   0.048   0.048   0.048   0.048   0.048   0.048   0.048   0.048   0.048
PI   0.048   0.048   0.039   0.039   0.039   0.039   0.039   0.039   0.039   0.039
PI   0.039   0.039   0.039   0.039
BA   133.9
LS     6.0      88
UD    28.8

KK  CNTRL1
KM        COMBINE ROUTED HYDROGRAPH WITH PLAINS HYDROGRAPH AT CONFLUENCE
HC       2

KK  ROUTE3
KM        ROUTE COMBINED HYDROGRAPH TO CENTRL CONFLUENCE (43,000 FEET)
RM       6     4.8     0.2
```

```
LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 149           KK  CENTRL
 150           KM        COMPUTE RUNOFF HYDROGRAPH FOR CENTRAL SULPHUR SPRINGS SUBBASIN
 151           KP       1
 152           KM         PLAN 1: 10-YR STORM
 153           PH      10   380.9    0.56    1.14    2.15    2.50    2.70    3.20    3.70    4.30
 154           PH    5.10    5.65
 155           BA   187.7
 156           LS     6.0      74
 157           UD    34.4
 158           KP       2
 159           KM         PLAN 2: 25-YR STORM
 160           PH       4   380.9    0.65    1.35    2.58    2.80    3.10    3.60    4.40    4.90
 161           PH    5.85    6.40
 162           KP       3
 163           KM         PLAN 3: 50-YR STORM
 164           PH       2   380.9    0.72    1.52    2.92    3.30    3.60    4.20    4.90    5.60
 165           PH    6.70    7.40
 166           KP       4
 167           KM         PLAN 4: 100-YR STORM
 168           PH       1   380.9    0.80    1.68    3.25    3.70    4.00    4.80    5.40    6.30
 169           PH    7.60    8.45
 170           KP       5
 171           KM         PLAN 5: PROBABLE MAXIMUM STORM
 172           IN      30
 173           PI   0.034   0.034   0.034   0.034   0.034   0.034   0.034   0.034   0.034   0.034
 174           PI   0.034   0.034   0.041   0.041   0.041   0.041   0.041   0.041   0.041   0.041
 175           PI   0.041   0.041   0.041   0.041   0.053   0.053   0.053   0.053   0.053   0.053
 176           PI   0.053   0.053   0.053   0.053   0.053   0.053   0.072   0.072   0.072   0.072
 177           PI   0.072   0.072   0.072   0.072   0.072   0.072   0.072   0.072   0.101   0.103
 178           PI   0.105   0.107   0.110   0.113   0.116   0.119   0.122   0.126   0.130   0.134
 179           PI   0.214   0.224   0.234   0.246   0.259   0.273   0.289   0.306   0.324   0.343
 180           PI   0.363   0.385   0.453   0.631   0.729   0.860   0.979   1.723   2.438   1.143
 181           PI   0.977   0.748   0.690   0.552   0.205   0.196   0.187   0.179   0.171   0.164
 182           PI   0.158   0.153   0.148   0.144   0.140   0.137   0.089   0.089   0.089   0.089
 183           PI   0.089   0.089   0.089   0.089   0.089   0.089   0.089   0.089   0.061   0.061
 184           PI   0.061   0.061   0.061   0.061   0.061   0.061   0.061   0.061   0.061   0.061
 185           PI   0.046   0.046   0.046   0.046   0.046   0.046   0.046   0.046   0.046   0.046
 186           PI   0.046   0.046   0.037   0.037   0.037   0.037   0.037   0.037   0.037   0.037
 187           PI   0.037   0.037   0.037   0.037
 188           BA   187.7
 189           LS     6.0      88
 190           UD    34.4

 191           KK  CNTRL2
 192           KM        COMBINE ROUTED HYDROGRAPH WITH CENTRAL SULPHUR SPRINGS SUBBASIN
 193           HC       2

 194           KK  ROUTE4
 195           KM        ROUTE COMBINED HYDROGRAPH TO UPPER WELCH BASIN CONFLUENCE (81,600 FT)
 196           RM      12     9.1     0.2
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LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


 197           KK  UP-WCH
 198           KM        COMPUTE RUNOFF HYDROGRAPH FOR UPPER WELCH OIL FIELD SUBBASIN
 199           KP       1
 200           KM         PLAN 1: 10-YR STORM
 201           PH      10   380.9    0.56    1.14    2.15    2.50    2.70    3.20    3.70    4.30
 202           PH    5.10    5.65
 203           BA    51.9
 204           LS     9.4      74
 205           UD    11.9
 206           KP       2
 207           KM         PLAN 2: 25-YR STORM
 208           PH       4   380.9    0.65    1.35    2.58    2.80    3.10    3.60    4.40    4.90
 209           PH    5.85    6.40
 210           KP       3
 211           KM         PLAN 3: 50-YR STORM
 212           PH       2   380.9    0.72    1.52    2.92    3.30    3.60    4.20    4.90    5.60
 213           PH    6.70    7.40
 214           KP       4
 215           KM         PLAN 4: 100-YR STORM
 216           PH       1   380.9    0.80    1.68    3.25    3.70    4.00    4.80    5.40    6.30
 217           PH    7.60    8.45
 218           KP       5
 219           KM         PLAN 5: PROBABLE MAXIMUM STORM
 220           IN      30
 221           PI   0.025   0.025   0.025   0.025   0.025   0.025   0.025   0.025   0.025   0.025
 222           PI   0.025   0.025   0.031   0.031   0.031   0.031   0.031   0.031   0.031   0.031
 223           PI   0.031   0.031   0.031   0.031   0.039   0.039   0.039   0.039   0.039   0.039
 224           PI   0.039   0.039   0.039   0.039   0.039   0.039   0.053   0.053   0.053   0.053
 225           PI   0.053   0.053   0.053   0.053   0.053   0.053   0.053   0.053   0.075   0.076
 226           PI   0.077   0.079   0.081   0.083   0.085   0.087   0.090   0.093   0.095   0.098
 227           PI   0.153   0.159   0.165   0.173   0.181   0.190   0.200   0.211   0.223   0.235
 228           PI   0.249   0.264   0.309   0.423   0.478   0.534   0.590   0.649   0.687   0.613
 229           PI   0.583   0.483   0.458   0.374   0.148   0.142   0.136   0.131   0.126   0.121
 230           PI   0.117   0.113   0.110   0.106   0.104   0.101   0.065   0.065   0.065   0.065
 231           PI   0.065   0.065   0.065   0.065   0.065   0.065   0.065   0.065   0.045   0.045
 232           PI   0.045   0.045   0.045   0.045   0.045   0.045   0.045   0.045   0.045   0.045
 233           PI   0.034   0.034   0.034   0.034   0.034   0.034   0.034   0.034   0.034   0.034
 234           PI   0.034   0.034   0.028   0.028   0.028   0.028   0.028   0.028   0.028   0.028
 235           PI   0.028   0.028   0.028   0.028
 236           BA    51.9
 237           LS     9.4      88
 238           UD    11.9

 239           KK    NECK
 240           KM        COMBINE UPPER WELCH RUNOFF HYDROGRAPH WITH ROUTED HYDROGRAPH
 241           HC       2

 242           KK  ROUTE5
 243           KM        ROUTE COMBINED HYDROGRAPH TO WELCH FIELD CONFLUENCE (92,000 FEET)
 244           RM      13    10.2     0.2
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


 245          KK  WLCH-S
 246          KM        COMPUTE RUNOFF HYDROGRAPH FOR WELCH FIELD SOUTH SUBBASIN
 247          KP       1
 248          KM         PLAN 1: 10-YR STORM
 249          PH      10   380.9    0.58    1.16    2.18    2.60    2.80    3.40    3.90    4.60
 250          PH    5.10    5.65
 251          BA    40.3
 252          LS     9.4      74
 253          UD    16.7
 254          KP       2
 255          KM         PLAN 2: 25-YR STORM
 256          PH       4   380.9    0.67    1.37    2.62    3.10    3.30    3.80    4.70    5.30
 257          PH    5.85    6.40
 258          KP       3
 259          KM         PLAN 3: 50-YR STORM
 260          PH       2   380.9    0.75    1.54    2.96    3.40    3.70    4.40    5.30    6.10
 261          PH    6.70    7.40
 262          KP       4
 263          KM         PLAN 4: 100-YR STORM
 264          PH       1   380.9    0.82    1.70    3.30    3.80    4.20    5.10    5.90    6.90
 265          PH    7.60    8.45
 266          KP       5
 267          KM         PLAN 5: PROBABLE MAXIMUM STORM
 268          IN      30
 269          PI   0.016   0.016   0.016   0.016   0.016   0.016   0.016   0.016   0.016   0.016
 270          PI   0.016   0.016   0.020   0.020   0.020   0.020   0.020   0.020   0.020   0.020
 271          PI   0.020   0.020   0.020   0.020   0.025   0.025   0.025   0.025   0.025   0.025
 272          PI   0.025   0.025   0.025   0.025   0.025   0.025   0.035   0.035   0.035   0.035
 273          PI   0.035   0.035   0.035   0.035   0.035   0.035   0.035   0.035   0.048   0.049
 274          PI   0.050   0.051   0.053   0.054   0.055   0.057   0.058   0.060   0.062   0.064
 275          PI   0.099   0.103   0.107   0.112   0.117   0.122   0.127   0.133   0.138   0.144
 276          PI   0.151   0.157   0.176   0.223   0.246   0.268   0.291   0.304   0.308   0.298
 277          PI   0.287   0.248   0.238   0.203   0.095   0.091   0.088   0.085   0.082   0.079
 278          PI   0.076   0.074   0.072   0.069   0.067   0.066   0.042   0.042   0.042   0.042
 279          PI   0.042   0.042   0.042   0.042   0.042   0.042   0.042   0.042   0.029   0.029
 280          PI   0.029   0.029   0.029   0.029   0.029   0.029   0.029   0.029   0.029   0.029
 281          PI   0.022   0.022   0.022   0.022   0.022   0.022   0.022   0.022   0.022   0.022
 282          PI   0.022   0.022   0.018   0.018   0.018   0.018   0.018   0.018   0.018   0.018
 283          PI   0.018   0.018   0.018   0.018
 284          BA    40.3
 285          LS     9.4      88
 286          UD    16.7

 287          KK  WLCH-N
 288          KM        COMPUTE RUNOFF HYDROGRAPH FOR WELCH FIELD NORTH SUBBASIN
 289          KP       1
 290          KM         PLAN 1: 10-YR STORM
 291          PH      10   380.9    0.58    1.16    2.18    2.60    2.80    3.40    3.90    4.60
 292          PH    5.10    5.65
 293          BA    38.7
 294          LS     9.4      74
 295          UD    15.2
 296          KP       2
 297          KM         PLAN 2: 25-YR STORM
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ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

PH       4   380.9    0.67    1.37    2.62    3.10    3.30    3.80    4.70    5.30
PH    5.85    6.40
KP       3
KM          PLAN 3: 50-YR STORM
PH       2   380.9    0.75    1.54    2.96    3.40    3.70    4.40    5.30    6.10
PH    6.70    7.40
KP       4
KM          PLAN 4: 100-YR STORM
PH       1   380.9    0.82    1.70    3.30    3.80    4.20    5.10    5.90    6.90
PH    7.60    8.45
KP       5
KM          PLAN 5: PROBABLE MAXIMUM STORM
IN      30
PI   0.016   0.016   0.016   0.016   0.016   0.016   0.016   0.016   0.016   0.016
PI   0.016   0.016   0.019   0.019   0.019   0.019   0.019   0.019   0.019   0.019
PI   0.019   0.019   0.019   0.019   0.024   0.024   0.024   0.024   0.024   0.024
PI   0.024   0.024   0.024   0.024   0.024   0.024   0.034   0.034   0.034   0.034
PI   0.034   0.034   0.034   0.034   0.034   0.034   0.034   0.034   0.047   0.048
PI   0.049   0.050   0.051   0.052   0.054   0.055   0.057   0.058   0.060   0.062
PI   0.096   0.099   0.103   0.108   0.112   0.117   0.122   0.128   0.133   0.139
PI   0.145   0.151   0.169   0.214   0.235   0.256   0.278   0.290   0.294   0.285
PI   0.274   0.237   0.227   0.194   0.092   0.089   0.085   0.082   0.080   0.077
PI   0.074   0.072   0.070   0.068   0.066   0.064   0.041   0.041   0.041   0.041
PI   0.041   0.041   0.041   0.041   0.041   0.041   0.041   0.041   0.028   0.028
PI   0.028   0.028   0.028   0.028   0.028   0.028   0.028   0.028   0.028   0.028
PI   0.022   0.022   0.022   0.022   0.022   0.022   0.022   0.022   0.022   0.022
PI   0.022   0.022   0.017   0.017   0.017   0.017   0.017   0.017   0.017   0.017
PI   0.017   0.017   0.017   0.017
BA    38.7
LS     9.4      88
UD    15.2

KK  DIRECT
KM         COMPUTE RUNOFF HYDROGRAPH FOR SULPHUR SPRINGS DRAW DIRECT FLOW
KM         WITHIN WELCH FIELD SUBBASIN
KP       1
KM          PLAN 1: 10-YR STORM
PH      10   380.9    0.58    1.16    2.18    2.60    2.80    3.40    3.90    4.60
PH    5.10    5.65
BA    27.0
LS       0      74
UD     6.1
KP       2
KM          PLAN 2: 25-YR STORM
PH       4   380.9    0.67    1.37    2.62    3.10    3.30    3.80    4.70    5.30
PH    5.85    6.40
KP       3
KM          PLAN 3: 50-YR STORM
PH       2   380.9    0.75    1.54    2.96    3.40    3.70    4.40    5.30    6.10
PH    6.70    7.40
KP       4
KM          PLAN 4: 100-YR STORM
PH       1   380.9    0.82    1.70    3.30    3.80    4.20    5.10    5.90    6.90
PH    7.60    8.45
KP       5
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 352          KM          PLAN 5: PROBABLE MAXIMUM STORM
 353          IN      30
 354          PI   0.017   0.017   0.017   0.017   0.017   0.017   0.017   0.017   0.017   0.017
 355          PI   0.017   0.017   0.021   0.021   0.021   0.021   0.021   0.021   0.021   0.021
 356          PI   0.021   0.021   0.021   0.021   0.027   0.027   0.027   0.027   0.027   0.027
 357          PI   0.027   0.027   0.027   0.027   0.027   0.027   0.037   0.037   0.037   0.037
 358          PI   0.037   0.037   0.037   0.037   0.037   0.037   0.037   0.037   0.051   0.052
 359          PI   0.053   0.055   0.056   0.057   0.059   0.060   0.062   0.064   0.066   0.068
 360          PI   0.106   0.110   0.115   0.120   0.125   0.131   0.137   0.143   0.149   0.156
 361          PI   0.164   0.171   0.193   0.248   0.274   0.300   0.327   0.342   0.346   0.335
 362          PI   0.323   0.277   0.265   0.224   0.101   0.097   0.094   0.090   0.087   0.084
 363          PI   0.081   0.078   0.076   0.074   0.072   0.070   0.045   0.045   0.045   0.045
 364          PI   0.045   0.045   0.045   0.045   0.045   0.045   0.045   0.045   0.031   0.031
 365          PI   0.031   0.031   0.031   0.031   0.031   0.031   0.031   0.031   0.031   0.031
 366          PI   0.024   0.024   0.024   0.024   0.024   0.024   0.024   0.024   0.024   0.024
 367          PI   0.024   0.024   0.019   0.019   0.019   0.019   0.019   0.019   0.019   0.019
 368          PI   0.019   0.019   0.019   0.019
 369          BA    27.0
 370          LS       0      88
 371          UD     6.1

 372          KK   WELCH
 373          KM         COMBINE WELCH FIELD RUNOFF HYDROGRAPHS WITH ROUTED HYDROGRAPH
 374          HC       4

 375          KK  ROUTE6
 376          KM         ROUTE COMBINED HYDROGRAPH TO POTENTIAL STRUCTURE LOCATION (147,200 FT)
 377          RM      21    16.4     0.2

 378          KK   PLAYA
 379          KM         COMPUTE RUNOFF HYDROGRAPH FOR LOWER PLAYA SUBBASIN
 380          KP       1
 381          KM          PLAN 1: 10-YR STORM
 382          PH      10   380.9    0.58    1.16    2.18    2.60    2.80    3.40    3.90    4.60
 383          PH    5.10    5.65
 384          BA   353.2
 385          LS     9.4      74
 386          UD    31.1
 387          KP       2
 388          KM          PLAN 2: 25-YR STORM
 389          PH       4   380.9    0.67    1.37    2.62    3.10    3.30    3.80    4.70    5.30
 390          PH    5.85    6.40
 391          KP       3
 392          KM          PLAN 3: 50-YR STORM
 393          PH       2   380.9    0.75    1.54    2.96    3.40    3.70    4.40    5.30    6.10
 394          PH    6.70    7.40
 395          KP       4
 396          KM          PLAN 4: 100-YR STORM
 397          PH       1   380.9    0.82    1.70    3.30    3.80    4.20    5.10    5.90    6.90
 398          PH    7.60    8.45
 399          KP       5
 400          KM          PLAN 5: PROBABLE MAXIMUM STORM
 401          IN      30
 402          PI   0.008   0.008   0.008   0.008   0.008   0.008   0.008   0.008   0.008   0.008
 403          PI   0.008   0.008   0.009   0.009   0.009   0.009   0.009   0.009   0.009   0.009
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ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

PI   0.009   0.009   0.009   0.009   0.012   0.012   0.012   0.012   0.012   0.012
PI   0.012   0.012   0.012   0.012   0.012   0.012   0.017   0.017   0.017   0.017
PI   0.017   0.017   0.017   0.017   0.017   0.017   0.017   0.017   0.023   0.024
PI   0.024   0.025   0.025   0.026   0.026   0.027   0.028   0.029   0.030   0.030
PI   0.044   0.045   0.046   0.048   0.049   0.050   0.052   0.054   0.055   0.057
PI   0.059   0.061   0.066   0.079   0.085   0.091   0.097   0.101   0.103   0.099
PI   0.096   0.086   0.083   0.073   0.043   0.042   0.041   0.040   0.039   0.038
PI   0.037   0.036   0.035   0.034   0.033   0.032   0.020   0.020   0.020   0.020
PI   0.020   0.020   0.020   0.020   0.020   0.020   0.020   0.020   0.014   0.014
PI   0.014   0.014   0.014   0.014   0.014   0.014   0.014   0.014   0.014   0.014
PI   0.011   0.011   0.011   0.011   0.011   0.011   0.011   0.011   0.011   0.011
PI   0.011   0.011   0.009   0.009   0.009   0.009   0.009   0.009   0.009   0.009
PI   0.009   0.009   0.009   0.009
BA   353.2
LS     9.4      88
UD    31.1

KK  LAMESA
KM        COMPUTE RUNOFF HYDROGRAPH FOR SULPHUR SPRINGS DRAW NEAR LAMESA
KM        DIRECT RUNOFF NEAR DRAW.
KP       1
KM         PLAN 1: 10-YR STORM
PH      10   380.9    0.58    1.16    2.18    2.60    2.80    3.40    3.90    4.60
PH    5.10    5.65
BA    62.2
LS       0      74
UD     9.8
KP       2
KM         PLAN 2: 25-YR STORM
PH       4   380.9    0.67    1.37    2.62    3.10    3.30    3.80    4.70    5.30
PH    5.85    6.40
KP       3
KM         PLAN 3: 50-YR STORM
PH       2   380.9    0.75    1.54    2.96    3.40    3.70    4.40    5.30    6.10
PH    6.70    7.40
KP       4
KM         PLAN 4: 100-YR STORM
PH       1   380.9    0.82    1.70    3.30    3.80    4.20    5.10    5.90    6.90
PH    7.60    8.45
KP       5
KM         PLAN 5: PROBABLE MAXIMUM STORM
IN      30
PI   0.009   0.009   0.009   0.009   0.009   0.009   0.009   0.009   0.009   0.009
PI   0.009   0.009   0.011   0.011   0.011   0.011   0.011   0.011   0.011   0.011
PI   0.011   0.011   0.011   0.011   0.014   0.014   0.014   0.014   0.014   0.014
PI   0.014   0.014   0.014   0.014   0.014   0.014   0.019   0.019   0.019   0.019
PI   0.019   0.019   0.019   0.019   0.019   0.019   0.019   0.019   0.027   0.028
PI   0.028   0.029   0.029   0.030   0.031   0.032   0.033   0.034   0.035   0.036
PI   0.052   0.053   0.054   0.056   0.057   0.059   0.061   0.063   0.065   0.067
PI   0.070   0.072   0.078   0.093   0.100   0.107   0.115   0.119   0.121   0.117
PI   0.113   0.101   0.097   0.086   0.051   0.050   0.048   0.047   0.046   0.045
PI   0.044   0.042   0.041   0.040   0.038   0.037   0.024   0.024   0.024   0.024
PI   0.024   0.024   0.024   0.024   0.024   0.024   0.024   0.024   0.016   0.016
PI   0.016   0.016   0.016   0.016   0.016   0.016   0.016   0.016   0.016   0.016
PI   0.012   0.012   0.012   0.012   0.012   0.012   0.012   0.012   0.012   0.012
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 458          PI   0.012   0.012   0.010   0.010   0.010   0.010   0.010   0.010   0.010   0.010
 459          PI   0.010   0.010   0.010   0.010
 460          BA    62.2
 461          LS       0      88
 462          UD     9.8

 463          KK  INFLOW
 464          KM        COMBINE HYDROGRAPHS AT POTENTIAL STRUCTURE LOCATION
 465          HC       3

 466          KK     DAM
 467          KM        ROUTE DESIGN STROMS THROUGH SULPHUR SPRINGS DRAW DAM ALTERNATIVE
 468          RS       1    ELEV    2630
 469          SV       0      66     261    3815   10066   42452
 470          SE    2615    2620    2625    2640    2650    2675
 471          SL    2630   28.27     0.7     0.5
 472          SS  2659.3    1000     2.7     1.5
 473          ST    2675    2640     3.0     1.5
 474          ZZ
```

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HEC1 S/N: 1090525070        HMVersion: 5.20    Data File: SSDRAW.HC1

*****************************************                                                 *****************************************
*                                       *                                                 *                                       *
*  FLOOD HYDROGRAPH PACKAGE  (HEC-1)    *                                                 *   U.S. ARMY CORPS OF ENGINEERS        *
*           FEBRUARY 1981               *                                                 *  THE HYDROLOGIC ENGINEERING CENTER    *
*         REVISED 02 AUG 88             *                                                 *         609 SECOND STREET             *
*                                       *                                                 *       DAVIS, CALIFORNIA 95616         *
* RUN DATE  09/13/1990  TIME  12:58:23  *                                                 *                                       *
*                                       *                                                 *                                       *
*****************************************                                                 *****************************************



                          MARTIN COUNTY FLOOD CONTROL STUDY       JOB NO. 06901-001-036
                          HYDROLOGIC ANALYSIS OF SULPHUR SPRINGS DRAW WATERSHED FOR
                          10-YR, 25-YR, 50-YR, 100-YR AND PMP STORMS.


  7 IO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                       NMIN          60  MINUTES IN COMPUTATION INTERVAL
                      IDATE      1    0  STARTING DATE
                      ITIME        0000  STARTING TIME
                         NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE     13    0  ENDING DATE
                     NDTIME        1100  ENDING TIME
                      ICENT          19  CENTURY MARK

                 COMPUTATION INTERVAL    1.00 HOURS
                      TOTAL TIME BASE  299.00 HOURS

          ENGLISH UNITS
              DRAINAGE AREA          SQUARE MILES
              PRECIPITATION DEPTH    INCHES
              LENGTH, ELEVATION      FEET
              FLOW                   CUBIC FEET PER SECOND
              STORAGE VOLUME         ACRE-FEET
              SURFACE AREA           ACRES
              TEMPERATURE            DEGREES FAHRENHEIT

    JP           MULTI-PLAN OPTION
                      NPLAN           5  NUMBER OF PLANS

    JR           MULTI-RATIO OPTION
                    RATIOS OF RUNOFF
                  1.00
```

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO FLOWS RATIO 1 1.00
HYDROGRAPH AT	UP-STH	150.40	1	FLOW	5254.
				TIME	81.00
			2	FLOW	6549.
				TIME	81.00
			3	FLOW	8117.
				TIME	81.00
			4	FLOW	9901.
				TIME	80.00
			5	FLOW	47726.
				TIME	68.00
HYDROGRAPH AT	UP-NTH	141.30	1	FLOW	5026.
				TIME	81.00
			2	FLOW	6262.
				TIME	80.00
			3	FLOW	7762.
				TIME	80.00
			4	FLOW	9464.
				TIME	80.00
			5	FLOW	46098.
				TIME	67.00
2 COMBINED AT	UPPER	291.70	1	FLOW	10281.
				TIME	81.00
			2	FLOW	12810.
				TIME	81.00
			3	FLOW	15875.
				TIME	80.00
			4	FLOW	19365.
				TIME	80.00
			5	FLOW	93777.
				TIME	68.00
ROUTED TO	ROUTE2	291.70	1	FLOW	10165.
				TIME	97.00
			2	FLOW	12670.
				TIME	97.00
			3	FLOW	15693.
				TIME	96.00
			4	FLOW	19127.
				TIME	96.00
			5	FLOW	92626.
				TIME	83.00
HYDROGRAPH AT	PLAINS	133.90	1	FLOW	0.
				TIME	1.00
			2	FLOW	1.
				TIME	123.00
			3	FLOW	390.

				TIME	107.00
			4	FLOW	1200.
				TIME	99.00
			5	FLOW	33047.
				TIME	71.00
2 COMBINED AT	CNTRL1	425.60	1	FLOW	10165.
				TIME	97.00
			2	FLOW	12670.
				TIME	97.00
			3	FLOW	16023.
				TIME	97.00
			4	FLOW	20316.
				TIME	96.00
			5	FLOW	119986.
				TIME	81.00
ROUTED TO	ROUTE3	425.60	1	FLOW	10129.
				TIME	102.00
			2	FLOW	12625.
				TIME	102.00
			3	FLOW	15967.
				TIME	102.00
			4	FLOW	20247.
				TIME	101.00
			5	FLOW	119487.
				TIME	85.00
HYDROGRAPH AT	CENTRL	187.70	1	FLOW	0.
				TIME	1.00
			2	FLOW	2.
				TIME	129.00
			3	FLOW	489.
				TIME	113.00
			4	FLOW	1516.
				TIME	105.00
			5	FLOW	39621.
				TIME	77.00
2 COMBINED AT	CNTRL2	613.30	1	FLOW	10129.
				TIME	102.00
			2	FLOW	12625.
				TIME	102.00
			3	FLOW	16387.
				TIME	102.00
			4	FLOW	21734.
				TIME	101.00
			5	FLOW	156308.
				TIME	84.00
ROUTED TO	ROUTE4	613.30	1	FLOW	10067.
				TIME	111.00
			2	FLOW	12551.
				TIME	111.00
			3	FLOW	16293.
				TIME	111.00
			4	FLOW	21602.
				TIME	110.00
			5	FLOW	155242.
				TIME	93.00

HYDROGRAPH AT	UP-WCH	51.90	1	FLOW	0.
				TIME	1.00
			2	FLOW	0.
				TIME	1.00
			3	FLOW	0.
				TIME	1.00
			4	FLOW	0.
				TIME	1.00
			5	FLOW	18810.
				TIME	53.00
2 COMBINED AT	NECK	665.20	1	FLOW	10067.
				TIME	111.00
			2	FLOW	12551.
				TIME	111.00
			3	FLOW	16293.
				TIME	111.00
			4	FLOW	21602.
				TIME	110.00
			5	FLOW	156098.
				TIME	93.00
ROUTED TO	ROUTE5	665.20	1	FLOW	9993.
				TIME	121.00
			2	FLOW	12462.
				TIME	121.00
			3	FLOW	16181.
				TIME	121.00
			4	FLOW	21457.
				TIME	121.00
			5	FLOW	154922.
				TIME	103.00
HYDROGRAPH AT	WLCH-S	40.30	1	FLOW	0.
				TIME	1.00
			2	FLOW	0.
				TIME	1.00
			3	FLOW	0.
				TIME	1.00
			4	FLOW	0.
				TIME	1.00
			5	FLOW	11084.
				TIME	59.00
HYDROGRAPH AT	WLCH-N	38.70	1	FLOW	0.
				TIME	1.00
			2	FLOW	0.
				TIME	1.00
			3	FLOW	0.
				TIME	1.00
			4	FLOW	0.
				TIME	1.00
			5	FLOW	11338.
				TIME	58.00
HYDROGRAPH AT	DIRECT	27.00	1	FLOW	3157.
				TIME	55.00
			2	FLOW	4047.
				TIME	55.00

			3	FLOW	5031.
				TIME	55.00
			4	FLOW	6107.
				TIME	55.00
			5	FLOW	19395.
				TIME	45.00
4 COMBINED AT	WELCH	771.20	1	FLOW	9994.
				TIME	121.00
			2	FLOW	12463.
				TIME	121.00
			3	FLOW	16182.
				TIME	121.00
			4	FLOW	21458.
				TIME	121.00
			5	FLOW	156151.
				TIME	103.00
ROUTED TO	ROUTE6	771.20	1	FLOW	9878.
				TIME	138.00
			2	FLOW	12319.
				TIME	138.00
			3	FLOW	16007.
				TIME	138.00
			4	FLOW	21226.
				TIME	137.00
			5	FLOW	154355.
				TIME	119.00
HYDROGRAPH AT	PLAYA	353.20	1	FLOW	0.
				TIME	1.00
			2	FLOW	0.
				TIME	1.00
			3	FLOW	0.
				TIME	1.00
			4	FLOW	0.
				TIME	1.00
			5	FLOW	60963.
				TIME	78.00
HYDROGRAPH AT	LAMESA	62.20	1	FLOW	5196.
				TIME	59.00
			2	FLOW	6718.
				TIME	59.00
			3	FLOW	8344.
				TIME	59.00
			4	FLOW	10072.
				TIME	59.00
			5	FLOW	31665.
				TIME	49.00
3 COMBINED AT	INFLOW	1186.60	1	FLOW	9879.
				TIME	138.00
			2	FLOW	12320.
				TIME	138.00
			3	FLOW	16008.
				TIME	138.00
			4	FLOW	21228.
				TIME	137.00
			5	FLOW	168725.

				TIME	118.00
ROUTED TO	DAM	1186.60	1	FLOW	9101.
				TIME	145.00
			2	FLOW	12097.
				TIME	141.00
			3	FLOW	15889.
				TIME	140.00
			4	FLOW	21100.
				TIME	139.00
			5	FLOW	168494.
				TIME	119.00

** PEAK STAGES IN FEET **

1	STAGE	2661.40
	TIME	145.00
2	STAGE	2661.88
	TIME	141.00
3	STAGE	2662.43
	TIME	140.00
4	STAGE	2663.12
	TIME	139.00
5	STAGE	2674.97
	TIME	119.00

SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DAM

PLAN 1 ....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	2630.00	2659.30	2675.00
STORAGE	1446.	22114.	42452.
OUTFLOW	0.	859.	169027.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	2661.40	.00	24833.	9101.	.00	145.00	.00

PLAN 2 ....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	2630.00	2659.30	2675.00
STORAGE	1446.	22114.	42452.
OUTFLOW	0.	859.	169027.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	2661.88	.00	25458.	12097.	.00	141.00	.00

PLAN 3 ....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	2630.00	2659.30	2675.00
STORAGE	1446.	22114.	42452.
OUTFLOW	0.	859.	169027.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	2662.43	.00	26175.	15889.	.00	140.00	.00

PLAN 4 ....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	2630.00	2659.30	2675.00
STORAGE	1446.	22114.	42452.
OUTFLOW	0.	859.	169027.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	2663.12	.00	27067.	21100.	.00	139.00	.00

PLAN 5 ....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	2630.00	2659.30	2675.00
STORAGE	1446.	22114.	42452.
OUTFLOW	0.	859.	169027.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	2674.97	.00	42409.	168494.	.00	119.00	.00

*** NORMAL END OF HEC-1 ***
NORMAL END OF HEC-1

APPENDIX E

```
HEC2 S/N: 39011296        HMVersion: 5.02    Data File: MARTIN.HC2

*******************************************************          ****************************************
*  WATER SURFACE PROFILES                             *          *  U.S. ARMY CORPS OF ENGINEERS        *
*  VERSION OF SEPTEMBER 1988                          *          *  THE HYDROLOGIC ENGINEERING CENTER   *
*                                                     *          *  609 SECOND STREET, SUITE D          *
*  UPDATED:  4 APRIL 1989                             *          *  DAVIS, CALIFORNIA 95616-4687        *
*  RUN DATE     2/27/90   TIME    15:48:11            *          *                                      *
*******************************************************          ****************************************


              X     X XXXXXXX  XXXXX           XXXXX
              X     X X       X     X         X     X
              X     X X       X                     X
              XXXXXXX XXXX    X         XXXXX  XXXXX
              X     X X       X               X
              X     X X       X     X         X
              X     X XXXXXXX  XXXXX          XXXXXXX


          :::::::::::::::::::::::::::::::::::::::::::::::
          :::::::::::::::::::::::::::::::::::::::::::::::
          :::                                         :::
          :::   FULL MICRO-COMPUTER IMPLEMENTATION    :::
          :::                                         :::
          :::::::::::::::::::::::::::::::::::::::::::::::
          :::::::::::::::::::::::::::::::::::::::::::::::

                    ============================
                    H A E S T A D   M E T H O D S
                    ============================

     37 Brookside Road  *  Waterbury, Connecticut  06708  *  (203) 755-1666


END OF BANNER
```

THIS RUN EXECUTED 2/27/90 15:48:11

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**************************************************
HEC2 RELEASE DATED SEP 88 UPDATED APR 1989

ERROR CORR - 01,02
MODIFICATION -
**************************************************
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T1 MARTIN COUNTY FLOOD STUDY HDR ENGINEERING, INC.
T2 JOB # 06901-001-036 AUSTIN, TEXAS
T3 SULPHUR SPRINGS DRAW
T4 WATER SURFACE PROFILE FOR SULPHUR SPRINGS DRAW FROM MARTIN COUNTY/
T5 HOWARD COUNTY LINE TO MARTIN COUNTY/DAWSON COUNTY LINE (32.6 MILES).

JOB CONTROL

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	2	0	0	.0013000	0	0.0155	0	2480	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1	0	-1							

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

38	43	1	42	8	25	26	4	37	13
14	15	66							

J5	LPRNT	NUMSEC	********REQUESTED SECTION NUMBERS********
	-10	-10	

DISCHARGE

QT	14	500	1000	2000	3000	4000	5000	7500	10000	12500
QT	15000	17500	20000	25000	30000					

BEGIN CROSS SECTION DATA

CROSS SECTION DATA TAKEN FROM USGS 7 1/2 MINUTE QUADRANGLE MAPS AT A SCALE OF 1 INCH = 2000 FEET AND A CONTOUR INTERVAL OF 5 FEET.

CROSS SECTION I.D. NUMBER EQUALS DISTANCE IN FEET UPSTREAM OF MARTIN COUNTY/HOWARD COUNTY LINE MINUS 1000 FEET.

NC	.045	.045	.04	.1	.3

CROSS SECTION 1000 EQUALS SECTION TAKEN ACROSS SULPHUR SPRINGS DRAW
AT MARTIN COUNTY/HOWARD COUNTY LINE

X1	1000	20	4100	4720	0	0	0			
GR	2490	3000	2490	3900	2485	3950	2480	4000	2475	4100
GR	2470	4275	2467	4412	2470	4550	2475	4720	2480	4880
GR	2485	4950	2490	5050	2495	5150	2500	5300	2500	6150
GR	2500	6700	2505	8400	2510	9700	2515	11500	2525	15100
X1	2200	31	5520	6600	1200	1200	1200			
GR	2525	1000	2525	1300	2525	1900	2520	2050	2515	2200
GR	2510	2350	2505	2600	2500	2750	2495	2900	2490	3000
GR	2485	3110	2480	3300	2475	3500	2475	3850	2480	4800
GR	2480	5400	2475	5520	2470	6000	2468.5	6200	2470	6400
GR	2475	6600	2480	6720	2485	6850	2490	7000	2495	7180
GR	2500	7300	2505	7420	2505	7800	2500	10000	2505	10600
GR	2525	17400								
X1	4200	15	4250	5850	2000	2000	2000			
GR	2540	1000	2525	1700	2510	2850	2505	3050	2505	3800
GR	2500	3900	2485	4250	2475	4550	2470	4925	2475	5300
GR	2480	5850	2495	6250	2500	7100	2505	8300	2525	15000
X1	6200	14	2850	4800	2000	2000	2000			
GR	2540	1000	2525	1550	2500	2500	2495	2600	2485	2850
GR	2480	3200	2475	3400	2475	3600	2480	4400	2495	4800
GR	2500	5450	2505	5850	2515	8700	2525	12100		
X1	8200	15	5350	6200	2000	2000	2000			
GR	2540	1000	2525	2100	2500	2800	2495	4250	2485	5350
GR	2480	5550	2478	5600	2480	5650	2485	6200	2500	6700
GR	2510	7300	2515	9100	2525	12500	2535	16200	2540	17400
X1	10200	11	4900	6550	2000	2000	2000			
GR	2540	1000	2525	2100	2500	2800	2495	4900	2485	5500
GR	2481	5850	2485	6200	2500	6550	2510	6700	2525	11200
GR	2540	14800								
X1	12200	11	4600	6500	2000	2000	2000			
GR	2540	1000	2525	2100	2500	2800	2495	4600	2485	4900
GR	2483	5500	2485	6100	2500	6500	2505	7600	2525	9900
GR	2540	13300								
X1	14200	11	2400	3750	2000	2000	2000			
GR	2540	1000	2530	1500	2525	1700	2500	2400	2490	2650
GR	2485	3050	2490	3450	2500	3750	2505	5800	2525	9600
GR	2540	12400								
X1	16200	13	5100	6550	2000	2000	2000			
GR	2540	1000	2525	1600	2515	2900	2510	3200	2500	4600
GR	2495	5100	2490	5400	2487	5750	2490	6100	2500	6550
GR	2505	7900	2525	11700	2540	14500				

CROSS SECTION 17600 LOCATED JUST DOWNSTREAM OF RED LAKE CONFLUENCE

X1	17600	16	6000	7500	1400	1400	1400			
GR	2540	1000	2525	1600	2515	2900	2505	4800	2500	5500
GR	2495	6000	2490	6250	2488	6550	2490	6850	2495	7500
GR	2500	7600	2505	7700	2510	9300	2515	10000	2525	11300
GR	2540	13900								

CROSS SECTION 20300 LOCATED JUST UPSTREM OF RED LAKE CONFLUENCE

X1	20300	17	8200	8900	2700	2700	2700			
GR	2550	1000	2545	1800	2540	2000	2525	3500	2515	4600
GR	2510	6000	2505	6900	2500	8200	2495	8450	2492	8575
GR	2495	8700	2500	8900	2510	9200	2515	9250	2515	10500
GR	2525	13000	2550	17000						
X1	22300	14	5400	8000	2000	2000	2000			
GR	2550	1000	2545	1400	2540	2300	2535	3900	2525	4200
GR	2510	4600	2510	5400	2500	6600	2495.8	7100	2500	7600
GR	2505	8000	2515	8500	2525	11900	2550	15800		
X1	24100	12	9000	10500	1800	1800	1800			
GR	2550	1000	2545	1500	2545	3500	2525	6800	2520	7800
GR	2515	9000	2500	9500	2498	9875	2500	10250	2515	10500
GR	2525	14200	2550	18100						
X1	26100	13	9000	11650	2000	2000	2000			
GR	2550	1000	2545	1500	2545	3500	2525	6800	2520	7150
GR	2515	8400	2510	9000	2505	10150	2500	10200	2500	10400
GR	2505	10850	2525	11650	2550	15500				
X1	28100	12	9100	11100	2000	2000	2000			
GR	2550	1000	2545	1500	2545	3500	2525	6800	2520	7000
GR	2515	8400	2510	9100	2505	9400	2502.5	9900	2505	10400
GR	2525	11100	2550	14300						
X1	30100	16	8350	9500	2000	2000	2000			
GR	2550	1000	2545	1500	2540	3400	2535	3900	2535	6200
GR	2525	6500	2520	7800	2515	8100	2510	8350	2505	8750
GR	2504.5	8825	2505	8900	2510	9500	2520	9700	2525	10200
GR	2550	14000								
X1	32100	15	6700	8500	2000	2000	2000			
GR	2550	1000	2545	1500	2540	3400	2535	3900	2535	5600
GR	2525	6350	2520	6700	2510	6950	2507	7225	2510	7500
GR	2515	7900	2515	8500	2525	9050	2535	10350	2550	11900
X1	34100	16	5500	6600	2000	2000	2000			
GR	2550	1000	2545	1600	2535	2000	2535	3050	2535	3400
GR	2530	3700	2525	5400	2520	5500	2510	6000	2509	6175
GR	2510	6350	2515	6600	2520	7200	2525	7400	2535	8700
GR	2550	10350								

X1	36100	9	1800	3700	2000	2000	2000			
GR	2550	1000	2525	1600	2520	1800	2515	2000	2515	3400
GR	2525	3700	2535	4000	2540	4700	2550	5600		
X1	40000	11	1500	2600	3900	3900	3900			
GR	2550	1000	2525	1350	2520	1500	2515	2100	2514	2200
GR	2515	2300	2520	2600	2525	2700	2540	3000	2545	5600
GR	2550	7000								
X1	42500	12	2400	4200	2500	2500	2500			
GR	2550	1000	2545	1250	2545	1900	2540	2100	2535	2400
GR	2525	2600	2520	3200	2520	3300	2525	3900	2535	4200
GR	2540	4750	2550	9400						
X1	48300	11	4300	5200	5800	5800	5800			
GR	2550	1000	2540	1200	2530	4300	2525	4800	2523.8	4900
GR	2525	5000	2530	5200	2540	5400	2545	6300	2545	9800
GR	2550	10400								
X1	51300	11	3000	4150	3000	3000	3000			
GR	2550	1000	2545	1200	2540	1800	2530	3000	2530	3200
GR	2530	3950	2525	4000	2525	4050	2530	4150	2535	5450
GR	2550	5800								
X1	53100	14	4650	7200	1800	1800	1800			
GR	2575	1000	2565	1200	2560	1800	2555	2100	2550	2400
GR	2550	3800	2550	4400	2540	4650	2535	5400	2530	5450
GR	2535	5500	2540	7200	2550	7650	2575	13600		
X1	54100	12	3100	6200	1000	1000	1000			
GR	2575	1000	2555	2100	2550	3100	2540	3500	2535	4200
GR	2535	4300	2540	5400	2545	5500	2550	6200	2555	6400
GR	2560	7600	2575	11500						
X1	58100	14	4300	7650	4000	4000	4000			
GR	2575	1000	2565	1600	2560	2100	2560	3250	2560	3600
GR	2555	4200	2550	4300	2545	4500	2545	5000	2540	6000
GR	2540	6100	2545	7100	2550	7650	2570	8500		
X1	61100	11	2800	6000	3000	3000	3000			
GR	2575	1000	2565	1600	2560	2800	2550	4500	2545	4900
GR	2545	5000	2555	5800	2560	6000	2550	6700	2550	7300
GR	2575	8800								
X1	64300	14	2900	6550	3200	3200	3200			
GR	2575	1000	2565	2300	2560	2900	2555	3150	2550	6050
GR	2550	6150	2555	6250	2560	6550	2565	6800	2565	8100
GR	2565	9000	2570	10500	2570	14500	2575	15400		

X1	66700	9	3100	4550	2400	2400	2400			
GR	2575	1000	2570	1600	2565	2100	2560	3100	2555	4000
GR	2552.5	4105	2555	4210	2560	4550	2575	4900		
X1	68800	9	2800	3700	2100	2100	2100			
GR	2575	1000	2570	1850	2570	2400	2565	2500	2560	2800
GR	2555	3200	2555	3300	2560	3700	2575	4050		
X1	71500	8	2100	4100	2700	2700	2700			
GR	2590	1000	2575	2100	2560	2750	2557	2925	2560	3100
GR	2565	3950	2575	4100	2590	6100				
X1	75000	12	4000	5700	3500	3500	3500			
GR	2600	1000	2595	1300	2575	4000	2570	4250	2565	4300
GR	2560	4400	2560	4500	2560	5000	2565	5500	2575	5700
GR	2595	6300	2600	7200						
X1	78500	9	2900	4200	3500	3500	3500			
GR	2600	1000	2595	1600	2575	2900	2570	3000	2565	3850
GR	2565	3900	2570	4000	2595	4200	2600	5400		
X1	80500	10	2400	3200	2000	2000	2000			
GR	2600	1000	2590	1300	2580	1900	2575	2400	2570	2600
GR	2570	2700	2570	3000	2570	3100	2575	3200	2600	3800
X1	84000	11	4000	6400	3500	3500	3500			
GR	2625	1000	2605	3300	2605	3900	2600	4000	2580	4300
GR	2575	5300	2575	5450	2580	5500	2585	5700	2600	6400
GR	2625	9600								
X1	87500	11	3700	4650	3500	3500	3500			
GR	2625	1000	2615	2500	2600	3200	2585	3700	2580	4300
GR	2580	4400	2585	4650	2590	5000	2600	5200	2620	6200
GR	2625	6900								
X1	89600	9	1800	4000	2100	2100	2100			
GR	2625	1000	2600	1800	2590	2050	2585	2200	2585	2900
GR	2590	3500	2595	3850	2600	4000	2625	5400		
X1	92000	11	5200	6650	2400	2400	2400			
GR	2650	1000	2630	2700	2625	4700	2600	5200	2595	5350
GR	2590	5700	2590	6450	2595	6600	2600	6650	2610	6750
GR	2625	8200								
X1	93800	9	3450	7100	1800	1800	1800			
GR	2645	1000	2625	2250	2615	3450	2600	4800	2595	5400
GR	2595	6300	2600	6550	2625	7100	2645	7900		

X1	96200	11	3300	4450	2400	2400	2400			
GR	2650	1000	2645	1400	2625	2500	2615	2900	2610	3300
GR	2600	3900	2598	4175	2600	4450	2625	5200	2640	6700
GR	2650	9100								
X1	97700	11	5250	5600	1500	1500	1500			
GR	2650	1000	2635	2100	2625	4400	2620	4900	2605	5250
GR	2600	5400	2600	5500	2605	5600	2625	5800	2640	6500
GR	2650	9000								
X1	101000	12	4850	6200	3300	3300	3300			
GR	2650	1000	2640	2500	2635	4400	2625	4850	2610	4950
GR	2610	5050	2608	5150	2610	5250	2610	5750	2625	6200
GR	2645	6700	2650	7100						
X1	103650	13	5300	6750	2650	2650	2650			
GR	2660	1000	2650	3700	2645	4450	2640	4650	2625	4950
GR	2625	5300	2610	5600	2610	5975	2610	6350	2615	6600
GR	2625	6750	2650	7100	2660	7350				
X1	106250	13	4400	5650	2600	2600	2600			
GR	2675	1000	2665	1750	2650	3100	2650	3950	2650	4200
GR	2625	4400	2615	4800	2610	5350	2610	5400	2615	5500
GR	2625	5650	2650	5900	2675	7200				

CROSS SECTION 107800 LOCATED AT POTENTIAL STRUCTURE LOCATION

X1	107800	20	3300	4500	1550	1550	1550			
GR	2680	1000	2675	1900	2670	2100	2665	2600	2660	2750
GR	2655	3150	2650	3300	2630	3400	2625	3450	2620	3650
GR	2615	3750	2613.5	3825	2615	3900	2620	4150	2625	4300
GR	2630	4400	2650	4500	2660	4700	2675	5400	2680	6800
X1	109900	16	5150	5850	2100	2100	2100			
GR	2700	1000	2675	3200	2670	3400	2665	3850	2665	4200
GR	2665	4700	2650	4900	2625	5150	2620	5400	2617.5	5500
GR	2620	5600	2625	5850	2650	6350	2670	6800	2675	7200
GR	2700	9900								
X1	111700	11	3600	4750	1800	1800	1800			
GR	2695	1000	2680	2400	2675	2950	2670	3300	2650	3600
GR	2625	3900	2620.3	4100	2625	4300	2650	4750	2675	5500
GR	2690	7000								
X1	115300	14	3700	6100	3600	3600	3600			
GR	2700	1000	2685	2500	2685	3200	2675	3400	2650	3700
GR	2640	3900	2635	4000	2635	4800	2630	5100	2627	5375
GR	2630	5650	2650	6100	2675	6250	2700	8000		

X1	117400	17	3200	5400	2100	2100	2100			
GR	2700	1000	2690	1700	2685	2400	2675	2650	2650	3200
GR	2645	3300	2640	3500	2640	3700	2635	3900	2630	4500
GR	2630	4550	2630	4600	2635	5050	2650	5400	2675	5850
GR	2680	6000	2700	8100						

CROSS SECTION 120100 LOCATED UPSTREAM OF ALKALI LAKE TRIBUTARY CONFLUENCE

X1	120100	14	1800	4900	2700	2700	2700			
GR	2700	1000	2675	1600	2650	1800	2645	1900	2640	2100
GR	2635	2900	2634	4500	2635	4700	2640	4800	2650	4900
GR	2675	5400	2680	5600	2685	6600	2700	8300		
X1	122500	11	2650	4200	2400	2400	2400			
GR	2700	1000	2675	2150	2650	2650	2645	2800	2640	3000
GR	2639	3200	2640	3400	2645	4100	2650	4200	2675	4800
GR	2700	7100								
X1	125500	14	1450	4300	3000	3000	3000			
X3	10							2680	2680	
GR	2700	1000	2675	1450	2655	1900	2650	2300	2645	2800
GR	2650	3300	2675	3700	2680	4300	2675	4800	2655	5800
GR	2651	6100	2655	6300	2675	6700	2700	9700		
X1	129500	19	4600	6000	4000	4000	4000			
X3	10							2680	2680	
GR	2700	1000	2690	1700	2685	2700	2685	3600	2685	4100
GR	2685	4600	2675	4900	2660	5250	2655	5500	2655	5600
GR	2660	5700	2675	5900	2680	6000	2660	6700	2657.5	6950
GR	2660	7200	2690	7800	2695	9500	2700	10600		
X1	131200	19	5800	7500	1700	1700	1700			
X3	10							2690	2690	
GR	2700	1000	2695	1600	2690	3000	2685	3850	2675	4050
GR	2675	5800	2665	6050	2660	6250	2660	6350	2665	6800
GR	2670	7050	2675	7200	2690	7500	2675	8450	2670	8550
GR	2668.5	8625	2670	8700	2695	9350	2700	10500		
X1	132800	16	6500	8000	1600	1600	1600			
X3	10							2690	2690	
GR	2700	1000	2695	1400	2695	2600	2690	3700	2685	4600
GR	2675	5200	2675	6500	2665	6900	2662	7075	2665	7250
GR	2675	7500	2685	7700	2690	8000	2676	8400	2695	9200
GR	2700	10000								
X1	137500	12	4250	5100	4700	4700	4700			
GR	2700	1000	2695	1800	2690	2300	2685	2900	2675	4250
GR	2670	4350	2668	4500	2670	5000	2675	5100	2690	5450
GR	2695	5700	2700	7500						

X1	141900	16	10300	11700	4400	4400	4400			
GR	2715	1000	2710	1250	2705	1700	2705	7600	2700	9300
GR	2695	9750	2675	10300	2670	10700	2670	10750	2670	10800
GR	2675	11200	2680	11700	2680	12200	2680	12400	2700	13100
GR	2715	14700								
X1	144400	13	8200	10750	2500	2500	2500			
GR	2715	1000	2705	1400	2705	6800	2700	8200	2690	8750
GR	2685	9500	2675	9900	2675	10000	2700	10750	2705	11200
GR	2710	13300	2710	14500	2715	15200				
X1	152100	11	4000	5900	7700	7700	7700			
GR	2715	1000	2710	2600	2705	3650	2700	4000	2695	4600
GR	2690	4700	2690	4800	2695	5000	2700	5900	2705	6600
GR	2715	7500								
X1	156600	8	2600	3500	4500	4500	4500			
GR	2725	1000	2720	2200	2705	2600	2700	2900	2700	3000
GR	2705	3500	2710	4200	2715	4400				
X1	159600	11	6500	7400	3000	3000	3000			
GR	2735	1000	2730	3700	2725	6400	2720	6500	2715	6700
GR	2710	6800	2710	6900	2715	7200	2720	7400	2725	7600
GR	2725	10200								
X1	163100	12	5900	6400	3500	3500	3500			
GR	2750	1000	2740	2100	2735	4100	2730	5700	2725	5900
GR	2720	6100	2719	6150	2720	6200	2725	6400	2730	6800
GR	2735	11200	2750	12700						
X1	165500	10	4100	5500	2400	2400	2400			
GR	2750	1000	2740	3400	2735	4100	2730	4700	2726	5200
GR	2730	5300	2735	5500	2740	5650	2740	10100	2750	11000
X1	168200	12	6200	6900	2700	2700	2700			
GR	2765	1000	2760	1700	2755	2100	2750	4800	2745	5600
GR	2735	6200	2730	6700	2730	6800	2735	6900	2745	7400
GR	2750	7700	2765	7900						
X1	170800	12	8000	9100	2600	2600	2600			
GR	2775	1000	2765	2700	2765	4900	2760	6000	2750	8000
GR	2740	8400	2735	8600	2735	8700	2740	8800	2750	9100
GR	2755	9900	2775	11500						

CROSS SECTION 172900 LOCATED AT MARTIN COUNTY/DAWSON COUNTY LINE

X1	172900	12	4400	5150	2100	2100	2100			
GR	2775	1000	2770	1400	2770	3500	2765	4100	2750	4400
GR	2745	4500	2741	4700	2745	5000	2750	5150	2755	5400
GR	2760	6100	2775	8100						

****

| END CROSS SECTION DATA |

****

T1 MARTIN COUNTY FLOOD STUDY HDR ENGINEERING, INC.
T2 JOB 06901-001-036 AUSTIN, TEXAS

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	0	.0013000	0	0.0155	0	2480	

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	2	0	-1							

T1 MARTIN COUNTY FLOOD STUDY HDR ENGINEERING, INC.
T2 JOB 06901-001-036 AUSTIN, TEXAS

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	4	0	0	.0013000	0	0.0155	0	2480	

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	3	0	-1							

T1 MARTIN COUNTY FLOOD STUDY HDR ENGINEERING, INC.
T2 JOB 06901-001-036 AUSTIN, TEXAS

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	5	0	0	.0013000	0	0.0155	0	2480	

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	4	0	-1							

T1 MARTIN COUNTY FLOOD STUDY HDR ENGINEERING, INC.
T2 JOB 06901-001-036 AUSTIN, TEXAS

J1 ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
0	6	0	0	.0013000	0	0.0155	0	2480	

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS

J2 NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
5	0	-1							

T1 MARTIN COUNTY FLOOD STUDY HDR ENGINEERING, INC.
T2 JOB 06901-001-036 AUSTIN, TEXAS

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	7	0	0	.0013000	0	0.0155	0	2480	

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	6	0	-1							

T1 MARTIN COUNTY FLOOD STUDY HDR ENGINEERING, INC.
T2 JOB 06901-001-036 AUSTIN, TEXAS

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	8	0	0	.0013000	0	0.0155	0	2480	

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	7	0	-1							

T1 MARTIN COUNTY FLOOD STUDY HDR ENGINEERING, INC.
T2 JOB 06901-001-036 AUSTIN, TEXAS

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	9	0	0	.0013000	0	0.0155	0	2480	

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	8	0	-1							

T1 MARTIN COUNTY FLOOD STUDY HDR ENGINEERING, INC.
T2 JOB 06901-001-036 AUSTIN, TEXAS

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	10	0	0	.0013000	0	0.0155	0	2480	

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	9	0	-1							

T1 MARTIN COUNTY FLOOD STUDY HDR ENGINEERING, INC.
T2 JOB 06901-001-036 AUSTIN, TEXAS

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	11	0	0	.0013000	0	0.0155	0	2480	

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	10	0	-1							

T1 MARTIN COUNTY FLOOD STUDY HDR ENGINEERING, INC.
T2 JOB 06901-001-036 AUSTIN, TEXAS

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	12	0	0	.0013000	0	0.0155	0	2480	

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	11	0	-1							

T1 MARTIN COUNTY FLOOD STUDY HDR ENGINEERING, INC.
T2 JOB 06901-001-036 AUSTIN, TEXAS

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	13	0	0	.0013000	0	0.0155	0	2480	

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	12	0	-1							

T1 MARTIN COUNTY FLOOD STUDY HDR ENGINEERING, INC.
T2 JOB 06901-001-036 AUSTIN, TEXAS

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	14	0	0	.0013000	0	0.0155	0	2480	

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	13	0	-1							

T1 MARTIN COUNTY FLOOD STUDY HDR ENGINEERING, INC.
T2 JOB 06901-001-036 AUSTIN, TEXAS

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	15	0	0	.0013000	0	0.0155	0	2480	

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15	0	-1							

THIS RUN EXECUTED 2/27/90 15:51:48

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HEC2 RELEASE DATED SEP 88 UPDATED APR 1989

ERROR CORR - 01,02
MODIFICATION -
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

SULPHUR SPRINGS DRAW

SUMMARY PRINTOUT

	SECNO	Q	CWSEL	ELMIN	DEPTH	AREA	VCH	TOPWID	TWA	QLOB	QCH	QROB	CUMDS
	1000.000	500.00	2469.61	2467.00	2.61	313.12	1.60	239.60	.00	.00	500.00	.00	.00
	1000.000	1000.00	2470.37	2467.00	3.37	520.18	1.92	300.81	.00	.00	1000.00	.00	.00
	1000.000	2000.00	2471.38	2467.00	4.38	858.92	2.33	370.45	.00	.00	2000.00	.00	.00
	1000.000	3000.00	2472.12	2467.00	5.12	1148.86	2.61	421.00	.00	.00	3000.00	.00	.00
	1000.000	4000.00	2472.72	2467.00	5.72	1417.09	2.82	462.88	.00	.00	4000.00	.00	.00
	1000.000	5000.00	2473.26	2467.00	6.26	1676.51	2.98	500.06	.00	.00	5000.00	.00	.00
	1000.000	7500.00	2474.34	2467.00	7.34	2253.21	3.33	574.15	.00	.00	7500.00	.00	.00
	1000.000	10000.00	2475.18	2467.00	8.18	2764.70	3.62	629.55	.00	.08	9999.79	.13	.00
	1000.000	12500.00	2475.81	2467.00	8.81	3171.88	3.96	662.33	.00	4.33	12488.75	6.92	.00
	1000.000	15000.00	2476.42	2467.00	9.42	3584.97	4.23	694.00	.00	19.02	14950.52	30.45	.00
	1000.000	17500.00	2476.94	2467.00	9.94	3950.96	4.51	720.90	.00	43.76	17386.20	70.05	.00
	1000.000	20000.00	2477.43	2467.00	10.43	4312.08	4.76	746.50	.00	80.16	19791.52	128.32	.00
	1000.000	25000.00	2478.32	2467.00	11.32	4992.33	5.21	792.47	.00	184.66	24519.72	295.61	.00
	1000.000	30000.00	2479.18	2467.00	12.18	5696.64	5.55	837.41	.00	339.74	29116.40	543.86	.00
*	2200.000	500.00	2470.47	2468.50	1.97	502.55	.99	463.78	9.75	.00	500.00	.00	1200.00
*	2200.000	1000.00	2471.18	2468.50	2.68	866.10	1.15	560.34	11.89	.00	1000.00	.00	1200.00
*	2200.000	2000.00	2472.19	2468.50	3.69	1500.39	1.33	697.50	14.77	.00	2000.00	.00	1200.00
*	2200.000	3000.00	2472.94	2468.50	4.44	2062.15	1.45	799.57	16.90	.00	3000.00	.00	1200.00
*	2200.000	4000.00	2473.56	2468.50	5.06	2583.70	1.55	883.84	18.65	.00	4000.00	.00	1200.00
*	2200.000	5000.00	2474.10	2468.50	5.60	3083.64	1.62	957.68	20.19	.00	5000.00	.00	1200.00
*	2200.000	7500.00	2475.15	2468.50	6.65	4220.72	1.80	1472.28	31.05	10.20	7489.76	.03	1200.00
*	2200.000	10000.00	2475.97	2468.50	7.47	5511.61	1.93	1698.63	35.83	248.15	9747.61	4.24	1200.00
*	2200.000	12500.00	2476.62	2468.50	8.12	6677.48	2.06	1879.78	39.56	642.31	11841.32	16.38	1200.00
*	2200.000	15000.00	2477.23	2468.50	8.73	7885.10	2.15	2050.61	43.11	1175.30	13787.20	37.50	1200.00
*	2200.000	17500.00	2477.77	2468.50	9.27	9033.59	2.24	2200.81	46.20	1790.52	15643.89	65.59	1200.00
*	2200.000	20000.00	2478.28	2468.50	9.78	10196.18	2.31	2343.07	49.13	2493.95	17405.05	101.00	1200.00
*	2200.000	25000.00	2479.21	2468.50	10.71	12487.66	2.42	2600.78	54.42	4092.30	20718.14	189.56	1200.00
*	2200.000	30000.00	2480.09	2468.50	11.59	14925.84	2.50	3425.63	68.88	5979.81	23715.26	304.93	1200.00

	SECNO	Q	CWSEL	ELMIN	DEPTH	AREA	VCH	TOPWID	TWA	QLOB	QCH	QROB	CUMDS
	4200.000	500.00	2472.19	2470.00	2.19	360.81	1.39	329.00	27.95	.00	500.00	.00	3200.00
*	4200.000	1000.00	2472.94	2470.00	2.94	646.63	1.55	440.44	35.31	.00	1000.00	.00	3200.00
*	4200.000	2000.00	2473.82	2470.00	3.82	1094.19	1.83	572.94	45.05	.00	2000.00	.00	3200.00
*	4200.000	3000.00	2474.47	2470.00	4.47	1499.53	2.00	670.71	51.94	.00	3000.00	.00	3200.00
*	4200.000	4000.00	2475.01	2470.00	5.01	1886.19	2.12	752.08	57.61	.00	4000.00	.00	3200.00
*	4200.000	5000.00	2475.48	2470.00	5.48	2249.92	2.22	816.99	62.41	.00	5000.00	.00	3200.00
*	4200.000	7500.00	2476.45	2470.00	6.45	3112.42	2.41	953.40	82.11	.00	7500.00	.00	3200.00
*	4200.000	10000.00	2477.24	2470.00	7.24	3895.06	2.57	1062.13	92.32	.00	10000.00	.00	3200.00
*	4200.000	12500.00	2477.90	2470.00	7.90	4627.31	2.70	1154.62	100.32	.00	12500.00	.00	3200.00
*	4200.000	15000.00	2478.50	2470.00	8.50	5354.78	2.80	1239.69	107.68	.00	15000.00	.00	3200.00
*	4200.000	17500.00	2479.05	2470.00	9.05	6045.63	2.89	1315.40	114.06	.00	17500.00	.00	3200.00
*	4200.000	20000.00	2479.55	2470.00	9.55	6737.08	2.97	1387.04	120.02	.00	20000.00	.00	3200.00
*	4200.000	25000.00	2480.43	2470.00	10.43	8017.32	3.12	1474.89	129.07	.00	24999.17	.83	3200.00
*	4200.000	30000.00	2481.23	2470.00	11.23	9203.56	3.27	1519.78	149.15	.00	29987.39	12.61	3200.00
*	6200.000	500.00	2476.07	2475.00	1.07	327.21	1.53	413.38	43.83	.00	500.00	.00	5200.00
*	6200.000	1000.00	2476.53	2475.00	1.53	545.92	1.83	508.30	55.28	.00	1000.00	.00	5200.00
*	6200.000	2000.00	2477.17	2475.00	2.17	906.08	2.21	634.37	70.89	.00	2000.00	.00	5200.00
*	6200.000	3000.00	2477.65	2475.00	2.65	1230.58	2.44	729.54	81.99	.00	3000.00	.00	5200.00
*	6200.000	4000.00	2478.04	2475.00	3.04	1533.38	2.61	808.30	91.34	.00	4000.00	.00	5200.00
*	6200.000	5000.00	2478.39	2475.00	3.39	1822.19	2.74	876.86	99.33	.00	5000.00	.00	5200.00
*	6200.000	7500.00	2479.11	2475.00	4.11	2503.34	3.00	1020.46	125.32	.00	7500.00	.00	5200.00
*	6200.000	10000.00	2479.69	2475.00	4.69	3136.15	3.19	1137.74	139.86	.00	10000.00	.00	5200.00
*	6200.000	12500.00	2480.19	2475.00	5.19	3722.24	3.36	1217.77	150.93	.00	12500.00	.00	5200.00
*	6200.000	15000.00	2480.65	2475.00	5.65	4290.13	3.50	1262.04	160.98	.00	15000.00	.00	5200.00
*	6200.000	17500.00	2481.09	2475.00	6.09	4854.39	3.60	1304.55	169.81	.00	17500.00	.00	5200.00
*	6200.000	20000.00	2481.51	2475.00	6.51	5403.17	3.70	1344.60	178.12	.00	20000.00	.00	5200.00
*	6200.000	25000.00	2482.27	2475.00	7.27	6454.73	3.87	1418.18	191.11	.00	25000.00	.00	5200.00
*	6200.000	30000.00	2482.97	2475.00	7.97	7478.68	4.01	1486.34	214.35	.00	30000.00	.00	5200.00
*	8200.000	500.00	2480.67	2478.00	2.67	199.09	2.51	199.32	62.06	.00	500.00	.00	7200.00
*	8200.000	1000.00	2481.37	2478.00	3.37	376.83	2.65	305.04	80.33	.00	1000.00	.00	7200.00
*	8200.000	2000.00	2482.07	2478.00	4.07	628.90	3.18	410.69	110.83	.00	2000.00	.00	7200.00
*	8200.000	3000.00	2482.61	2478.00	4.61	872.32	3.44	491.63	127.51	.00	3000.00	.00	7200.00
*	8200.000	4000.00	2483.05	2478.00	5.05	1101.76	3.63	557.25	139.96	.00	4000.00	.00	7200.00
*	8200.000	5000.00	2483.43	2478.00	5.43	1320.08	3.79	613.21	150.25	.00	5000.00	.00	7200.00
*	8200.000	7500.00	2484.19	2478.00	6.19	1829.98	4.10	727.32	180.74	.00	7500.00	.00	7200.00
*	8200.000	10000.00	2484.79	2478.00	6.79	2299.64	4.35	818.47	199.04	.00	10000.00	.00	7200.00
*	8200.000	12500.00	2485.28	2478.00	7.28	2717.12	4.61	889.89	213.21	2.16	12497.18	.66	7200.00
*	8200.000	15000.00	2485.68	2478.00	7.68	3083.07	4.91	947.00	225.71	22.77	14970.33	6.90	7200.00
*	8200.000	17500.00	2486.04	2478.00	8.04	3429.73	5.19	998.09	236.58	69.87	17408.96	21.17	7200.00
*	8200.000	20000.00	2486.36	2478.00	8.36	3761.11	5.46	1044.60	246.56	144.39	19811.86	43.74	7200.00
*	8200.000	25000.00	2486.96	2478.00	8.96	4411.58	5.92	1130.33	262.50	379.95	24504.94	115.11	7200.00
*	8200.000	30000.00	2487.48	2478.00	9.48	5025.82	6.34	1205.71	289.06	716.80	29066.05	217.15	7200.00

	SECNO	Q	CWSEL	ELMIN	DEPTH	AREA	VCH	TOPWID	TWA	QLOB	QCH	QROB	CUMDS
*	10200.000	500.00	2483.10	2481.00	2.10	383.40	1.30	366.32	75.35	.00	500.00	.00	9200.00
*	10200.000	1000.00	2483.75	2481.00	2.75	662.54	1.51	481.55	98.27	.00	1000.00	.00	9200.00
*	10200.000	2000.00	2484.61	2481.00	3.61	1137.60	1.76	631.00	134.14	.00	2000.00	.00	9200.00
*	10200.000	3000.00	2485.18	2481.00	4.18	1529.57	1.96	715.26	153.58	.00	3000.00	.00	9200.00
*	10200.000	4000.00	2485.65	2481.00	4.65	1872.16	2.14	754.12	168.06	.00	4000.00	.00	9200.00
*	10200.000	5000.00	2486.06	2481.00	5.06	2185.78	2.29	788.01	180.11	.00	5000.00	.00	9200.00
*	10200.000	7500.00	2486.90	2481.00	5.90	2882.85	2.60	858.57	214.26	.00	7500.00	.00	9200.00
*	10200.000	10000.00	2487.59	2481.00	6.59	3496.16	2.86	916.17	235.55	.00	10000.00	.00	9200.00
*	10200.000	12500.00	2488.18	2481.00	7.18	4048.94	3.09	965.14	252.19	.00	12500.00	.00	9200.00
*	10200.000	15000.00	2488.71	2481.00	7.71	4568.99	3.28	1009.04	266.71	.00	15000.00	.00	9200.00
*	10200.000	17500.00	2489.19	2481.00	8.19	5060.35	3.46	1048.84	279.37	.00	17500.00	.00	9200.00
*	10200.000	20000.00	2489.63	2481.00	8.63	5531.96	3.62	1085.66	290.95	.00	20000.00	.00	9200.00
*	10200.000	25000.00	2490.43	2481.00	9.43	6426.65	3.89	1152.29	309.73	.00	25000.00	.00	9200.00
*	10200.000	30000.00	2491.14	2481.00	10.14	7270.17	4.13	1211.76	338.73	.00	30000.00	.00	9200.00
*	12200.000	500.00	2484.43	2483.00	1.43	611.32	.82	856.49	105.67	.00	500.00	.00	11200.00
*	12200.000	1000.00	2484.90	2483.00	1.90	1078.72	.93	1137.74	135.26	.00	1000.00	.00	11200.00
*	12200.000	2000.00	2485.55	2483.00	2.55	1862.32	1.07	1230.88	174.58	.00	2000.00	.00	11200.00
*	12200.000	3000.00	2486.09	2483.00	3.09	2535.92	1.18	1261.51	196.20	.00	3000.00	.00	11200.00
*	12200.000	4000.00	2486.54	2483.00	3.54	3113.99	1.28	1287.21	211.81	.00	4000.00	.00	11200.00
*	12200.000	5000.00	2486.95	2483.00	3.95	3647.99	1.37	1310.51	225.16	.00	5000.00	.00	11200.00
*	12200.000	7500.00	2487.83	2483.00	4.83	4818.05	1.56	1360.16	261.95	.00	7500.00	.00	11200.00
*	12200.000	10000.00	2488.56	2483.00	5.56	5825.35	1.72	1401.50	285.38	.00	10000.00	.00	11200.00
*	12200.000	12500.00	2489.19	2483.00	6.19	6719.73	1.86	1437.21	303.82	.00	12500.00	.00	11200.00
*	12200.000	15000.00	2489.75	2483.00	6.75	7541.06	1.99	1469.24	319.96	.00	15000.00	.00	11200.00
*	12200.000	17500.00	2490.27	2483.00	7.27	8303.98	2.11	1498.37	334.07	.00	17500.00	.00	11200.00
*	12200.000	20000.00	2490.74	2483.00	7.74	9021.87	2.22	1525.28	346.99	.00	20000.00	.00	11200.00
*	12200.000	25000.00	2491.60	2483.00	8.60	10351.28	2.42	1573.89	368.19	.00	25000.00	.00	11200.00
*	12200.000	30000.00	2492.36	2483.00	9.36	11572.51	2.59	1617.27	399.35	.00	30000.00	.00	11200.00
*	14200.000	500.00	2487.00	2485.00	2.00	319.06	1.57	319.53	132.28	.00	500.00	.00	13200.00
*	14200.000	1000.00	2487.54	2485.00	2.54	516.44	1.94	406.52	169.79	.00	1000.00	.00	13200.00
*	14200.000	2000.00	2488.25	2485.00	3.25	841.20	2.38	518.83	216.86	.00	2000.00	.00	13200.00
*	14200.000	3000.00	2488.76	2485.00	3.76	1129.69	2.66	601.25	243.15	.00	3000.00	.00	13200.00
*	14200.000	4000.00	2489.19	2485.00	4.19	1398.56	2.86	668.98	262.26	.00	4000.00	.00	13200.00
*	14200.000	5000.00	2489.55	2485.00	4.55	1655.70	3.02	727.89	278.45	.00	5000.00	.00	13200.00
*	14200.000	7500.00	2490.31	2485.00	5.31	2247.70	3.34	816.85	320.65	.00	7500.00	.00	13200.00
*	14200.000	10000.00	2490.89	2485.00	5.89	2729.55	3.66	848.68	345.90	.00	10000.00	.00	13200.00
*	14200.000	12500.00	2491.39	2485.00	6.39	3167.39	3.95	876.59	364.74	.00	12500.00	.00	13200.00
*	14200.000	15000.00	2491.87	2485.00	6.87	3587.42	4.18	902.56	381.54	.00	15000.00	.00	13200.00
*	14200.000	17500.00	2492.31	2485.00	7.31	3991.40	4.38	926.85	396.45	.00	17500.00	.00	13200.00
*	14200.000	20000.00	2492.72	2485.00	7.72	4383.60	4.56	949.84	410.21	.00	20000.00	.00	13200.00
*	14200.000	25000.00	2493.50	2485.00	8.50	5135.18	4.87	992.41	433.11	.00	25000.00	.00	13200.00
*	14200.000	30000.00	2494.21	2485.00	9.21	5851.34	5.13	1031.33	465.93	.00	30000.00	.00	13200.00

	SECNO	Q	CWSEL	ELMIN	DEPTH	AREA	VCH	TOPWID	TWA	QLOB	QCH	QROB	CUMDS
*	16200.000	500.00	2488.98	2487.00	1.98	460.76	1.09	463.70	151.00	.00	500.00	.00	15200.00
*	16200.000	1000.00	2489.59	2487.00	2.59	784.14	1.28	604.92	193.99	.00	1000.00	.00	15200.00
*	16200.000	2000.00	2490.34	2487.00	3.34	1295.75	1.54	735.94	245.85	.00	2000.00	.00	15200.00
*	16200.000	3000.00	2490.89	2487.00	3.89	1714.69	1.75	793.46	274.79	.00	3000.00	.00	15200.00
*	16200.000	4000.00	2491.35	2487.00	4.35	2089.12	1.91	841.56	296.18	.00	4000.00	.00	15200.00
*	16200.000	5000.00	2491.75	2487.00	4.75	2431.68	2.06	883.26	314.38	.00	5000.00	.00	15200.00
*	16200.000	7500.00	2492.57	2487.00	5.57	3191.33	2.35	969.37	360.58	.00	7500.00	.00	15200.00
*	16200.000	10000.00	2493.24	2487.00	6.24	3870.13	2.58	1040.30	388.72	.00	10000.00	.00	15200.00
*	16200.000	12500.00	2493.84	2487.00	6.84	4507.93	2.77	1102.80	410.00	.00	12500.00	.00	15200.00
*	16200.000	15000.00	2494.37	2487.00	7.37	5106.63	2.94	1158.40	429.00	.00	15000.00	.00	15200.00
*	16200.000	17500.00	2494.85	2487.00	7.85	5683.59	3.08	1209.57	445.90	.00	17500.00	.00	15200.00
*	16200.000	20000.00	2495.28	2487.00	8,28	6217.40	3.22	1266.31	461.82	1.08	19998.92	.00	15200.00
*	16200.000	25000.00	2496.06	2487.00	9.06	7244.22	3.47	1378.89	489.05	35.93	24964.07	.00	15200.00
*	16200.000	30000.00	2496.76	2487.00	9.76	8249.23	3.69	1480.80	525.84	139.00	29861.00	.00	15200.00
	17600.000	500.00	2489.95	2488.00	1.95	573.06	.87	586.38	167.88	.00	500.00	.00	16600.00
	17600.000	1000.00	2490.53	2488.00	2.53	943.64	1.06	695.49	214.88	.00	1000.00	.00	16600.00
	17600.000	2000.00	2491.29	2488.00	3.29	1522.18	1.31	831.86	271.04	.00	2000.00	.00	16600.00
	17600.000	3000.00	2491.85	2488.00	3.85	2013.79	1.49	932.18	302.52	.00	3000.00	.00	16600.00
*	17600.000	4000.00	2492.30	2488.00	4.30	2460.86	1.63	1014.84	326.19	.00	4000.00	.00	16600.00
*	17600.000	5000.00	2492.71	2488.00	4.71	2889.58	1.73	1088.23	346.37	.00	5000.00	.00	16600.00
*	17600.000	7500.00	2493.56	2488.00	5.56	3882.15	1.93	1241.60	396.63	.00	7500.00	.00	16600.00
*	17600.000	10000.00	2494.27	2488.00	6.27	4802.65	2.08	1368.56	428.30	.00	10000.00	.00	16600.00
*	17600.000	12500.00	2494.88	2488.00	6.88	5672.57	2.20	1478.55	452.49	.00	12500.00	.00	16600.00
*	17600.000	15000.00	2495.39	2488.00	7.39	6438.29	2.33	1546.35	473.49	1.96	14997.65	.39	16600.00
*	17600.000	17500.00	2495.85	2488.00	7.85	7165.38	2.45	1601.78	492.02	15.68	17481.19	3.13	16600.00
*	17600.000	20000.00	2496.27	2488.00	8.27	7845.76	2.57	1651.96	509.51	45.26	19945.70	9.04	16600.00
*	17600.000	25000.00	2497.03	2488.00	9.03	9142.31	2.79	1743.60	539.68	157.48	24811.04	31.47	16600.00
*	17600.000	30000.00	2497.72	2488.00	9.72	10379.64	2.98	1826.78	579.17	341.91	29589.77	68.33	16600.00
*	20300.000	500.00	2494.45	2492.00	2.45	250.54	2.00	204.35	190.27	.00	500.00	.00	19300.00
*	20300.000	1000.00	2495.13	2492.00	3.13	411.30	2.43	262.74	243.20	.00	1000.00	.00	19300.00
*	20300.000	2000.00	2496.03	2492.00	4.03	676.99	2.95	341.85	306.78	.00	2000.00	.00	19300.00
*	20300.000	3000.00	2496.65	2492.00	4.65	909.20	3.30	398.32	343.67	.00	3000.00	.00	19300.00
*	20300.000	4000.00	2497.15	2492.00	5.15	1119.17	3.57	443.23	371.62	.00	4000.00	.00	19300.00
*	20300.000	5000.00	2497.57	2492.00	5.57	1314.99	3.80	481.35	395.43	.00	5000.00	.00	19300.00
*	20300.000	7500.00	2498.43	2492.00	6.43	1761.47	4.26	558.63	453.04	.00	7500.00	.00	19300.00
*	20300.000	10000.00	2499.12	2492.00	7.12	2166.35	4.62	620.44	490.62	.00	10000.00	.00	19300.00
*	20300.000	12500.00	2499.70	2492.00	7.70	2543.03	4.92	672.86	519.86	.00	12500.00	.00	19300.00
*	20300.000	15000.00	2500.19	2492.00	8.19	2890.59	5.20	756.00	545.16	1.83	14997.95	.21	19300.00
*	20300.000	17500.00	2500.62	2492.00	8.62	3237.91	5.48	879.20	567.73	40.30	17455.05	4.65	19300.00
*	20300.000	20000.00	2500.98	2492.00	8.98	3569.23	5.78	982.42	590.04	135.97	19848.35	15.68	19300.00
*	20300.000	25000.00	2501.61	2492.00	9.61	4246.15	6.31	1165.23	635.22	517.60	24422.70	59.70	19300.00
*	20300.000	30000.00	2502.15	2492.00	10.15	4928.36	6.75	1324.18	689.96	1139.03	28729.59	131.38	19300.00

	SECNO	Q	CWSEL	ELMIN	DEPTH	AREA	VCH	TOPWID	TWA	QLOB	QCH	QROB	CUMDS
*	22300.000	500.00	2497.54	2495.80	1.74	363.47	1.38	416.03	205.26	.00	500.00	.00	21300.00
*	22300.000	1000.00	2498.09	2495.80	2.29	621.80	1.61	544.15	262.89	.00	1000.00	.00	21300.00
*	22300.000	2000.00	2498.82	2495.80	3.02	1084.73	1.84	718.71	332.75	.00	2000.00	.00	21300.00
*	22300.000	3000.00	2499.37	2495.80	3.57	1512.97	1.98	848.81	374.09	.00	3000.00	.00	21300.00
*	22300.000	4000.00	2499.82	2495.80	4.02	1921.09	2.08	956.46	405.43	.00	4000.00	.00	21300.00
*	22300.000	5000.00	2500.21	2495.80	4.41	2308.24	2.17	1040.82	432.02	.00	5000.00	.00	21300.00
*	22300.000	7500.00	2501.03	2495.80	5.23	3236.69	2.32	1206.10	495.35	.00	7500.00	.00	21300.00
*	22300.000	10000.00	2501.72	2495.80	5.92	4116.22	2.43	1344.04	537.62	.00	10000.00	.00	21300.00
*	22300.000	12500.00	2502.32	2495.80	6.52	4958.80	2.52	1464.06	570.89	.00	12500.00	.00	21300.00
*	22300.000	15000.00	2502.85	2495.80	7.05	5761.23	2.60	1569.87	599.91	.00	15000.00	.00	21300.00
*	22300.000	17500.00	2503.33	2495.80	7.53	6534.11	2.68	1665.43	626.01	.00	17500.00	.00	21300.00
*	22300.000	20000.00	2503.76	2495.80	7.96	7274.18	2.75	1752.05	651.40	.00	20000.00	.00	21300.00
*	22300.000	25000.00	2504.52	2495.80	8.72	8665.38	2.89	1904.25	701.63	.00	25000.00	.00	21300.00
*	22300.000	30000.00	2505.18	2495.80	9.38	9962.10	3.01	2030.55	760.48	.00	29999.85	.15	21300.00
	24100.000	500.00	2499.66	2498.00	1.66	516.32	.97	622.28	226.71	.00	500.00	.00	23100.00
*	24100.000	1000.00	2500.05	2498.00	2.05	789.25	1.27	752.61	289.23	.00	1000.00	.00	23100.00
*	24100.000	2000.00	2500.64	2498.00	2.64	1240.35	1.61	782.01	362.25	.00	2000.00	.00	23100.00
	24100.000	3000.00	2501.23	2498.00	3.23	1711.69	1.75	811.58	408.39	.00	3000.00	.00	23100.00
	24100.000	4000.00	2501.64	2498.00	3.64	2047.35	1.95	832.01	442.38	.00	4000.00	.00	23100.00
	24100.000	5000.00	2502.00	2498.00	4.00	2345.64	2.13	849.74	471.08	.00	5000.00	.00	23100.00
	24100.000	7500.00	2502.76	2498.00	4.76	3000.70	2.50	887.45	538.61	.00	7500.00	.00	23100.00
*	24100.000	10000.00	2503.28	2498.00	5.28	3473.86	2.88	913.72	580.24	.00	10000.00	.00	23100.00
*	24100.000	12500.00	2503.82	2498.00	5.82	3977.81	3.14	940.89	614.66	.00	12500.00	.00	23100.00
*	24100.000	15000.00	2504.31	2498.00	6.31	4448.84	3.37	965.60	645.13	.00	15000.00	.00	23100.00
*	24100.000	17500.00	2504.77	2498.00	6.77	4897.54	3.57	988.56	673.24	.00	17500.00	.00	23100.00
*	24100.000	20000.00	2505.19	2498.00	7.19	5319.29	3.76	1009.67	700.46	.00	20000.00	.00	23100.00
*	24100.000	25000.00	2505.95	2498.00	7.95	6094.44	4.10	1047.35	753.97	.00	25000.00	.00	23100.00
*	24100.000	30000.00	2506.61	2498.00	8.61	6799.13	4.41	1080.47	815.63	.00	30000.00	.00	23100.00
	26100.000	500.00	2501.46	2500.00	1.46	399.07	1.25	346.14	248.94	.00	500.00	.00	25100.00
	26100.000	1000.00	2502.10	2500.00	2.10	641.14	1.56	410.16	315.92	.00	1000.00	.00	25100.00
*	26100.000	2000.00	2502.82	2500.00	2.82	960.94	2.08	481.86	389.68	.00	2000.00	.00	25100.00
*	26100.000	3000.00	2503.41	2500.00	3.41	1262.43	2.38	540.82	438.36	.00	3000.00	.00	25100.00
*	26100.000	4000.00	2503.90	2500.00	3.90	1539.29	2.60	589.79	474.61	.00	4000.00	.00	25100.00
*	26100.000	5000.00	2504.32	2500.00	4.32	1798.56	2.78	632.23	505.27	.00	5000.00	.00	25100.00
*	26100.000	7500.00	2505.22	2500.00	5.22	2414.41	3.11	760.78	576.97	.00	7500.00	.00	25100.00
*	26100.000	10000.00	2506.08	2500.00	6.08	3164.52	3.16	991.89	626.78	.00	10000.00	.00	25100.00
*	26100.000	12500.00	2506.75	2500.00	6.75	3889.30	3.21	1172.70	667.84	.00	12500.00	.00	25100.00
*	26100.000	15000.00	2507.29	2500.00	7.29	4552.32	3.30	1316.53	701.73	.00	15000.00	.00	25100.00
	26100.000	17500.00	2507.51	2500.00	7.51	4850.80	3.61	1376.38	727.53	.00	17500.00	.00	25100.00
	26100.000	20000.00	2507.94	2500.00	7.94	5471.52	3.66	1493.19	757.92	.00	20000.00	.00	25100.00
*	26100.000	25000.00	2509.03	2500.00	9.03	7255.28	3.45	1786.85	828.85	.00	25000.00	.00	25100.00
*	26100.000	30000.00	2509.72	2500.00	9.72	8569.24	3.50	1975.45	898.15	.00	30000.00	.00	25100.00

	SECNO	Q	CWSEL	ELMIN	DEPTH	AREA	VCH	TOPWID	TWA	QLOB	QCH	QROB	CUMDS
	28100.000	500.00	2503.93	2502.50	1.43	409.78	1.22	572.56	270.03	.00	500.00	.00	27100.00
	28100.000	1000.00	2504.42	2502.50	1.92	739.66	1.35	769.24	343.00	.00	1000.00	.00	27100.00
*	28100.000	2000.00	2505.11	2502.50	2.61	1358.46	1.47	1010.25	426.40	.00	2000.00	.00	27100.00
*	28100.000	3000.00	2505.54	2502.50	3.04	1806.97	1.66	1051.58	476.66	.00	3000.00	.00	27100.00
*	28100.000	4000.00	2505.94	2502.50	3.44	2225.52	1.80	1088.74	514.32	.00	4000.00	.00	27100.00
*	28100.000	5000.00	2506.29	2502.50	3.79	2622.65	1.91	1122.85	546.35	.00	5000.00	.00	27100.00
*	28100.000	7500.00	2507.10	2502.50	4.60	3553.44	2.11	1199.02	621.48	.00	7500.00	.00	27100.00
*	28100.000	10000.00	2507.80	2502.50	5.30	4425.24	2.26	1266.21	675.51	.00	10000.00	.00	27100.00
*	28100.000	12500.00	2508.40	2502.50	5.90	5200.91	2.40	1323.13	720.26	.00	12500.00	.00	27100.00
*	28100.000	15000.00	2508.92	2502.50	6.42	5902.82	2.54	1372.60	757.29	.00	15000.00	.00	27100.00
*	28100.000	17500.00	2509.31	2502.50	6.81	6447.62	2.71	1409.81	784.89	.00	17500.00	.00	27100.00
*	28100.000	20000.00	2509.72	2502.50	7.22	7033.49	2.84	1448.75	818.38	.00	20000.00	.00	27100.00
*	28100.000	25000.00	2510.53	2502.50	8.03	8244.64	3.04	1567.84	898.13	7.04	24992.96	.00	27100.00
*	28100.000	30000.00	2511.20	2502.50	8.70	9327.25	3.24	1684.35	975.16	61.55	29938.45	.00	27100.00
	30100.000	500.00	2506.38	2504.50	1.88	435.31	1.15	426.17	292.96	.00	500.00	.00	29100.00
	30100.000	1000.00	2506.90	2504.50	2.40	682.67	1.46	529.69	372.82	.00	1000.00	.00	29100.00
*	30100.000	2000.00	2507.53	2504.50	3.03	1060.31	1.89	656.98	464.11	.00	2000.00	.00	29100.00
*	30100.000	3000.00	2508.04	2504.50	3.54	1415.84	2.12	757.52	518.92	.00	3000.00	.00	29100.00
*	30100.000	4000.00	2508.45	2504.50	3.95	1744.59	2.29	839.84	560.27	.00	4000.00	.00	29100.00
*	30100.000	5000.00	2508.81	2504.50	4.31	2057.77	2.43	911.38	595.83	.00	5000.00	.00	29100.00
*	30100.000	7500.00	2509.55	2504.50	5.05	2793.67	2.68	1060.64	677.46	.00	7500.00	.00	29100.00
*	30100.000	10000.00	2510.17	2504.50	5.67	3479.38	2.87	1161.62	736.60	.16	9999.78	.06	29100.00
*	30100.000	12500.00	2510.63	2504.50	6.13	4020.21	3.12	1193.77	783.08	5.43	12492.40	2.17	29100.00
*	30100.000	15000.00	2511.04	2504.50	6.54	4522.30	3.34	1222.85	821.29	20.98	14970.63	8.39	29100.00
*	30100.000	17500.00	2511.42	2504.50	6.92	4986.10	3.55	1249.12	850.06	47.65	17433.30	19.05	29100.00
*	30100.000	20000.00	2511.77	2504.50	7.27	5436.40	3.73	1274.10	884.82	86.57	19878.83	34.60	29100.00
*	30100.000	25000.00	2512.45	2504.50	7.95	6318.57	4.05	1321.68	967.44	203.54	24715.10	81.36	29100.00
*	30100.000	30000.00	2513.06	2504.50	8.56	7137.64	4.33	1364.38	1047.13	366.29	29487.29	146.41	29100.00
*	32100.000	500.00	2509.02	2507.00	2.02	371.88	1.34	369.26	311.08	.00	500.00	.00	31100.00
	32100.000	1000.00	2509.52	2507.00	2.52	580.44	1.72	461.33	395.57	.00	1000.00	.00	31100.00
	32100.000	2000.00	2510.31	2507.00	3.31	997.74	2.00	582.04	492.55	.00	2000.00	.00	31100.00
	32100.000	3000.00	2510.84	2507.00	3.84	1326.13	2.26	638.54	550.97	.00	3000.00	.00	31100.00
	32100.000	4000.00	2511.29	2507.00	4.29	1618.38	2.47	684.92	595.27	.00	4000.00	.00	31100.00
*	32100.000	5000.00	2511.64	2507.00	4.64	1865.66	2.68	721.83	632.84	.00	5000.00	.00	31100.00
*	32100.000	7500.00	2512.41	2507.00	5.41	2456.53	3.05	803.19	719.36	.00	7500.00	.00	31100.00
*	32100.000	10000.00	2513.04	2507.00	6.04	2984.34	3.35	869.46	781.92	.00	10000.00	.00	31100.00
*	32100.000	12500.00	2513.59	2507.00	6.59	3473.04	3.60	926.60	830.88	.00	12500.00	.00	31100.00
*	32100.000	15000.00	2514.07	2507.00	7.07	3937.52	3.81	977.82	871.38	.00	15000.00	.00	31100.00
*	32100.000	17500.00	2514.52	2507.00	7.52	4382.87	3.99	1024.53	902.14	.00	17500.00	.00	31100.00
*	32100.000	20000.00	2514.93	2507.00	7.93	4814.00	4.15	1067.80	938.71	.00	20000.00	.00	31100.00
	32100.000	25000.00	2515.73	2507.00	8.73	6132.80	4.08	1733.46	1037.57	.00	24988.43	11.57	31100.00
	32100.000	30000.00	2516.23	2507.00	9.23	7025.99	4.29	1774.20	1119.18	.00	29954.20	45.80	31100.00

	SECNO	Q	CWSEL	ELMIN	DEPTH	AREA	VCH	TOPWID	TWA	QLOB	QCH	QROB	CUMDS
*	34100.000	500.00	2510.80	2509.00	1.80	488.49	1.02	430.35	329.44	.00	500.00	.00	33100.00
*	34100.000	1000.00	2511.32	2509.00	2.32	720.86	1.39	481.32	416.30	.00	1000.00	.00	33100.00
*	34100.000	2000.00	2512.16	2509.00	3.16	1161.05	1.72	565.43	517.81	.00	2000.00	.00	33100.00
*	34100.000	3000.00	2512.78	2509.00	3.78	1530.92	1.96	627.44	579.10	.00	3000.00	.00	33100.00
*	34100.000	4000.00	2513.28	2509.00	4.28	1863.26	2.15	678.34	625.72	.00	4000.00	.00	33100.00
*	34100.000	5000.00	2513.71	2509.00	4.71	2158.86	2.32	720.61	664.85	.00	5000.00	.00	33100.00
*	34100.000	7500.00	2514.61	2509.00	5.61	2850.80	2.63	810.96	755.48	.00	7500.00	.00	33100.00
*	34100.000	10000.00	2515.31	2509.00	6.31	3453.12	2.90	903.91	821.93	.00	9998.19	1.81	33100.00
*	34100.000	12500.00	2515.90	2509.00	6.90	4004.10	3.15	1002.20	875.24	.00	12470.73	29.27	33100.00
*	34100.000	15000.00	2516.43	2509.00	7.43	4549.84	3.36	1090.85	919.65	.00	14899.58	100.42	33100.00
*	34100.000	17500.00	2516.89	2509.00	7.89	5090.44	3.54	1172.07	954.02	.00	17280.83	219.17	33100.00
*	34100.000	20000.00	2517.32	2509.00	8.32	5610.67	3.71	1245.24	993.93	.00	19619.02	380.98	33100.00
*	34100.000	25000.00	2518.04	2509.00	9.04	6551.27	4.04	1367.64	1103.94	.00	24198.36	801.64	33100.00
*	34100.000	30000.00	2518.64	2509.00	9.64	7397.21	4.34	1469.03	1191.39	.00	28671.01	1328.99	33100.00
*	36100.000	500.00	2515.34	2515.00	.34	466.62	1.07	1423.14	369.39	.00	500.00	.00	35100.00
*	36100.000	1000.00	2515.58	2515.00	.58	828.11	1.21	1440.81	457.91	.00	1000.00	.00	35100.00
*	36100.000	2000.00	2515.73	2515.00	.73	1042.39	1.92	1451.18	562.23	.00	2000.00	.00	35100.00
*	36100.000	3000.00	2515.89	2515.00	.89	1262.86	2.38	1461.78	625.21	.00	3000.00	.00	35100.00
*	36100.000	4000.00	2516.21	2515.00	1.21	1758.60	2.27	1485.33	675.40	.00	4000.00	.00	35100.00
*	36100.000	5000.00	2516.48	2515.00	1.48	2153.77	2.32	1503.84	715.92	.00	5000.00	.00	35100.00
*	36100.000	7500.00	2516.73	2515.00	1.73	2536.01	2.96	1521.53	807.11	.00	7500.00	.00	35100.00
*	36100.000	10000.00	2517.29	2515.00	2.29	3386.94	2.95	1560.18	875.14	.00	10000.00	.00	35100.00
*	36100.000	12500.00	2517.75	2515.00	2.75	4108.86	3.04	1592.24	930.65	.00	12500.00	.00	35100.00
*	36100.000	15000.00	2518.19	2515.00	3.19	4822.86	3.11	1623.33	976.31	.00	15000.00	.00	35100.00
*	36100.000	17500.00	2518.60	2515.00	3.60	5498.20	3.18	1652.19	1012.42	.00	17500.00	.00	35100.00
*	36100.000	20000.00	2519.00	2515.00	4.00	6159.59	3.25	1679.98	1053.89	.00	20000.00	.00	35100.00
*	36100.000	25000.00	2519.71	2515.00	4.71	7362.35	3.40	1729.37	1166.58	.00	25000.00	.00	35100.00
*	36100.000	30000.00	2520.35	2515.00	5.35	8472.04	3.54	1773.72	1256.30	.78	29999.22	.00	35100.00
*	40000.000	500.00	2515.84	2514.00	1.84	332.65	1.50	351.79	691.08	.00	500.00	.00	39000.00
*	40000.000	1000.00	2516.44	2514.00	2.44	575.49	1.74	459.54	727.52	.00	1000.00	.00	39000.00
*	40000.000	2000.00	2517.11	2514.00	3.11	922.33	2.17	579.69	838.15	.00	2000.00	.00	39000.00
*	40000.000	3000.00	2517.64	2514.00	3.64	1256.51	2.39	675.53	897.79	.00	3000.00	.00	39000.00
*	40000.000	4000.00	2518.20	2514.00	4.20	1661.75	2.41	776.03	924.10	.00	4000.00	.00	39000.00
*	40000.000	5000.00	2518.68	2514.00	4.68	2050.97	2.44	861.60	942.13	.00	5000.00	.00	39000.00
*	40000.000	7500.00	2519.39	2514.00	5.39	2724.24	2.75	992.33	1053.79	.00	7500.00	.00	39000.00
*	40000.000	10000.00	2520.15	2514.00	6.16	3520.32	2.84	1107.71	1109.49	.08	9999.88	.05	39000.00
*	40000.000	12500.00	2520.76	2514.00	6.76	4196.28	2.99	1137.82	1160.55	4.89	12491.85	3.26	39000.00
*	40000.000	15000.00	2521.30	2514.00	7.30	4818.61	3.13	1164.84	1193.59	19.77	14967.06	13.17	39000.00
*	40000.000	17500.00	2521.85	2514.00	7.85	5466.60	3.24	1192.33	1210.24	48.41	17419.33	32.26	39000.00
	40000.000	20000.00	2522.69	2514.00	8.69	6490.43	3.14	1234.52	1184.36	115.18	19808.06	76.75	39000.00
	40000.000	25000.00	2523.36	2514.00	9.36	7323.73	3.50	1267.82	1300.76	215.21	24641.38	143.41	39000.00
*	40000.000	30000.00	2523.63	2514.00	9.63	7676.65	4.02	1281.67	1435.14	296.65	29505.67	197.68	39000.00

	SECNO	Q	CWSEL	ELMIN	DEPTH	AREA	VCH	TOPWID	TWA	QLOB	QCH	QROB	CUMDS
	42500.000	500.00	2521.24	2520.00	1.24	307.15	1.63	396.78	712.56	.00	500.00	.00	41500.00
	42500.000	1000.00	2521.68	2520.00	1.68	504.44	1.98	502.13	755.11	.00	1000.00	.00	41500.00
	42500.000	2000.00	2522.35	2520.00	2.35	895.98	2.23	663.38	873.82	.00	2000.00	.00	41500.00
	42500.000	3000.00	2522.80	2520.00	2.80	1218.58	2.46	771.31	939.31	.00	3000.00	.00	41500.00
*	42500.000	4000.00	2523.22	2520.00	3.22	1567.46	2.55	873.14	969.88	.00	4000.00	.00	41500.00
*	42500.000	5000.00	2523.53	2520.00	3.53	1846.72	2.71	946.80	992.01	.00	5000.00	.00	41500.00
*	42500.000	7500.00	2524.18	2520.00	4.18	2513.27	2.98	1102.89	1112.13	.00	7500.00	.00	41500.00
*	42500.000	10000.00	2524.70	2520.00	4.70	3120.14	3.20	1227.87	1173.67	.00	10000.00	.00	41500.00
*	42500.000	12500.00	2525.11	2520.00	5.11	3648.22	3.43	1305.69	1227.10	.00	12500.00	.00	41500.00
*	42500.000	15000.00	2525.47	2520.00	5.47	4109.05	3.65	1323.22	1261.48	.00	15000.00	.00	41500.00
*	42500.000	17500.00	2525.80	2520.00	5.80	4553.45	3.84	1339.90	1279.39	.00	17500.00	.00	41500.00
*	42500.000	20000.00	2526.13	2520.00	6.13	4998.12	4.00	1356.40	1255.06	.00	20000.00	.00	41500.00
*	42500.000	25000.00	2526.75	2520.00	6.75	5839.03	4.28	1387.05	1373.19	.00	25000.00	.00	41500.00
*	42500.000	30000.00	2527.29	2520.00	7.29	6602.63	4.54	1414.31	1508.75	.00	30000.00	.00	41500.00
*	48300.000	500.00	2525.95	2523.80	2.16	375.38	1.33	333.92	773.45	.00	500.00	.00	47300.00
*	48300.000	1000.00	2526.77	2523.80	2.97	691.23	1.45	447.15	831.56	.00	1000.00	.00	47300.00
*	48300.000	2000.00	2527.65	2523.80	3.85	1144.30	1.75	571.67	969.44	.00	2000.00	.00	47300.00
*	48300.000	3000.00	2528.29	2523.80	4.49	1533.77	1.96	660.20	1049.24	.00	3000.00	.00	47300.00
*	48300.000	4000.00	2528.80	2523.80	5.00	1888.33	2.12	731.53	1091.09	.00	4000.00	.00	47300.00
*	48300.000	5000.00	2529.23	2523.80	5.43	2217.90	2.25	792.09	1122.64	.00	5000.00	.00	47300.00
*	48300.000	7500.00	2530.10	2523.80	6.30	2967.89	2.53	935.21	1262.31	.25	7499.73	.02	47300.00
*	48300.000	10000.00	2530.72	2523.80	6.92	3602.97	2.83	1137.43	1343.71	41.15	9956.19	2.65	47300.00
*	48300.000	12500.00	2531.23	2523.80	7.43	4218.95	3.10	1303.96	1419.15	171.56	12317.38	11.06	47300.00
*	48300.000	15000.00	2531.67	2523.80	7.87	4835.89	3.33	1451.72	1473.87	396.87	14577.55	25.58	47300.00
*	48300.000	17500.00	2532.08	2523.80	8.28	5452.49	3.53	1585.70	1510.02	712.00	16742.10	45.90	47300.00
*	48300.000	20000.00	2532.45	2523.80	8.65	6068.66	3.71	1709.13	1502.18	1109.91	18818.54	71.55	47300.00
*	48300.000	25000.00	2533.12	2523.80	9.32	7277.81	4.01	1928.51	1649.77	2113.01	22750.78	136.21	47300.00
*	48300.000	30000.00	2533.69	2523.80	9.89	8441.15	4.27	2118.25	1811.63	3335.97	26448.98	215.05	47300.00
	51300.000	500.00	2528.30	2525.00	3.30	328.39	1.52	149.01	790.08	.00	500.00	.00	50300.00
*	51300.000	1000.00	2529.03	2525.00	4.03	444.33	2.25	170.76	850.74	.00	1000.00	.00	50300.00
*	51300.000	2000.00	2530.53	2525.00	5.53	1281.98	1.60	1349.74	1014.40	9.27	1970.64	20.08	50300.00
*	51300.000	3000.00	2531.19	2525.00	6.19	2275.78	1.41	1605.33	1177.87	53.16	2831.67	115.17	50300.00
*	51300.000	4000.00	2531.40	2525.00	6.40	2607.24	1.66	1681.96	1232.39	88.11	3720.99	190.90	50300.00
*	51300.000	5000.00	2531.74	2525.00	6.74	3197.69	1.73	1810.45	1262.86	146.39	4536.42	317.19	50300.00
*	51300.000	7500.00	2532.42	2525.00	7.42	4523.08	1.90	2070.03	1406.76	326.42	6466.31	707.26	50300.00
*	51300.000	10000.00	2532.96	2525.00	7.96	5685.84	2.06	2273.49	1496.54	540.50	8288.39	1171.10	50300.00
*	51300.000	12500.00	2533.42	2525.00	8.42	6769.96	2.20	2447.99	1581.00	782.17	10023.08	1694.74	50300.00
*	51300.000	15000.00	2533.83	2525.00	8.83	7813.61	2.32	2604.97	1644.44	1047.65	11682.41	2269.94	50300.00
*	51300.000	17500.00	2534.21	2525.00	9.21	8826.59	2.43	2748.76	1688.83	1333.18	13278.20	2888.62	50300.00
*	51300.000	20000.00	2534.56	2525.00	9.56	9815.03	2.53	2882.17	1688.81	1636.02	14819.20	3544.77	50300.00
*	51300.000	25000.00	2535.19	2525.00	10.19	11709.91	2.68	3077.37	1849.96	2272.84	17689.30	5037.85	50300.00
*	51300.000	30000.00	2535.74	2525.00	10.74	13407.35	2.81	3155.44	2017.55	2927.15	20309.93	6762.92	50300.00

	SECNO	Q	CWSEL	ELMIN	DEPTH	AREA	VCH	TOPWID	TWA	QLOB	QCH	QROB	CUMDS
*	53100.000	500.00	2533.73	2530.00	3.73	139.16	3.59	74.61	794.83	.00	500.00	.00	52100.00
*	53100.000	1000.00	2534.80	2530.00	4.80	230.24	4.34	95.97	856.60	.00	1000.00	.00	52100.00
*	53100.000	2000.00	2536.34	2530.00	6.34	820.48	2.44	754.37	1050.19	.00	2000.00	.00	52100.00
*	53100.000	3000.00	2536.76	2530.00	6.76	1179.99	2.54	959.89	1226.67	.00	3000.00	.00	52100.00
*	53100.000	4000.00	2537.05	2530.00	7.05	1481.97	2.70	1103.33	1289.31	.00	4000.00	.00	52100.00
*	53100.000	5000.00	2537.31	2530.00	7.31	1793.23	2.79	1233.84	1324.63	.00	5000.00	.00	52100.00
*	53100.000	7500.00	2537.83	2530.00	7.83	2498.57	3.00	1487.81	1477.12	.00	7500.00	.00	52100.00
*	53100.000	10000.00	2538.25	2530.00	8.25	3154.97	3.17	1690.23	1573.28	.00	10000.00	.00	52100.00
*	53100.000	12500.00	2538.60	2530.00	8.60	3787.20	3.30	1864.53	1662.99	.00	12500.00	.00	52100.00
*	53100.000	15000.00	2538.92	2530.00	8.92	4414.01	3.40	2022.56	1730.95	.00	15000.00	.00	52100.00
*	53100.000	17500.00	2539.21	2530.00	9.21	5003.82	3.50	2160.73	1779.38	.00	17500.00	.00	52100.00
*	53100.000	20000.00	2539.48	2530.00	9.48	5606.24	3.57	2293.28	1783.09	.00	20000.00	.00	52100.00
*	53100.000	25000.00	2539.96	2530.00	9.96	6773.29	3.69	2530.38	1950.42	.00	25000.00	.00	52100.00
*	53100.000	30000.00	2540.30	2530.00	10.30	7654.57	3.92	2571.31	2118.81	.55	29998.45	1.00	52100.00
*	54100.000	500.00	2536.03	2535.00	1.03	295.01	1.69	471.60	802.63	.00	500.00	.00	53100.00
*	54100.000	1000.00	2536.31	2535.00	1.31	439.37	2.28	571.27	867.79	.00	1000.00	.00	53100.00
*	54100.000	2000.00	2537.01	2535.00	2.01	924.21	2.16	821.85	1068.57	.00	2000.00	.00	53100.00
*	54100.000	3000.00	2537.47	2535.00	2.47	1347.55	2.23	990.07	1247.95	.00	3000.00	.00	53100.00
*	54100.000	4000.00	2537.83	2535.00	2.83	1726.06	2.32	1119.27	1312.77	.00	4000.00	.00	53100.00
*	54100.000	5000.00	2538.13	2535.00	3.13	2077.50	2.41	1227.11	1349.83	.00	5000.00	.00	53100.00
*	54100.000	7500.00	2538.74	2535.00	3.74	2887.52	2.60	1445.34	1505.64	.00	7500.00	.00	53100.00
*	54100.000	10000.00	2539.21	2535.00	4.21	3596.30	2.78	1612.25	1604.28	.00	10000.00	.00	53100.00
*	54100.000	12500.00	2539.60	2535.00	4.60	4262.11	2.93	1754.63	1695.75	.00	12500.00	.00	53100.00
*	54100.000	15000.00	2539.95	2535.00	4.95	4896.17	3.06	1880.22	1765.32	.00	15000.00	.00	53100.00
*	54100.000	17500.00	2540.25	2535.00	5.25	5484.83	3.19	1915.25	1814.96	.00	17500.00	.00	53100.00
*	54100.000	20000.00	2540.53	2535.00	5.53	6015.01	3.33	1931.79	1819.78	.00	20000.00	.00	53100.00
*	54100.000	25000.00	2541.03	2535.00	6.03	6977.87	3.58	1961.46	1989.12	.00	25000.00	.00	53100.00
*	54100.000	30000.00	2541.45	2535.00	6.45	7796.63	3.85	1986.35	2158.60	.00	30000.00	.00	53100.00
*	58100.000	500.00	2541.33	2540.00	1.33	482.52	1.04	629.30	857.10	.00	500.00	.00	57100.00
*	58100.000	1000.00	2541.73	2540.00	1.73	775.44	1.29	793.95	937.85	.00	1000.00	.00	57100.00
*	58100.000	2000.00	2542.32	2540.00	2.32	1305.04	1.53	1026.66	1159.31	.00	2000.00	.00	57100.00
*	58100.000	3000.00	2542.75	2540.00	2.74	1773.17	1.69	1195.21	1353.40	.00	3000.00	.00	57099.99
*	58100.000	4000.00	2543.08	2540.00	3.08	2198.56	1.82	1329.98	1430.19	.00	4000.00	.00	57100.00
*	58100.000	5000.00	2543.37	2540.00	3.37	2604.66	1.92	1446.97	1477.44	.00	5000.00	.00	57099.99
*	58100.000	7500.00	2543.96	2540.00	3.96	3531.02	2.12	1683.69	1654.18	.00	7500.00	.00	57099.99
*	58100.000	10000.00	2544.44	2540.00	4.44	4393.94	2.28	1877.54	1769.49	.00	10000.00	.00	57100.00
*	58100.000	12500.00	2544.85	2540.00	4.85	5199.17	2.40	2041.89	1875.33	.00	12500.00	.00	57100.00
*	58100.000	15000.00	2545.35	2540.00	5.34	6431.10	2.33	2653.17	1992.14	.00	15000.00	.00	57100.00
*	58100.000	17500.00	2545.61	2540.00	5.61	7112.22	2.46	2691.41	2043.47	.00	17500.00	.00	57100.00
*	58100.000	20000.00	2545.85	2540.00	5.85	7772.44	2.57	2727.95	2049.77	.00	20000.00	.00	57100.00
*	58100.000	25000.00	2546.31	2540.00	6.31	9028.04	2.77	2796.14	2222.20	.00	25000.00	.00	57100.00
*	58100.000	30000.00	2546.73	2540.00	6.73	10209.15	2.94	2858.80	2395.22	.00	30000.00	.00	57100.00

	SECNO	Q	CWSEL	ELMIN	DEPTH	AREA	VCH	TOPWID	TWA	QLOB	QCH	QROB	CUMDS
*	61100.000	500.00	2546.45	2545.00	1.45	317.57	1.57	334.10	887.27	.00	500.00	.00	60100.00
*	61100.000	1000.00	2547.02	2545.00	2.02	526.99	1.90	422.66	976.49	.00	1000.00	.00	60100.00
*	61100.000	2000.00	2547.73	2545.00	2.73	868.83	2.30	536.68	1208.86	.00	2000.00	.00	60100.00
*	61100.000	3000.00	2548.23	2545.00	3.23	1158.67	2.59	617.07	1411.09	.00	3000.00	.00	60099.99
*	61100.000	4000.00	2548.64	2545.00	3.64	1417.24	2.82	680.82	1494.46	.00	4000.00	.00	60100.00
*	61100.000	5000.00	2548.98	2545.00	3.98	1663.60	3.01	736.45	1547.38	.00	5000.00	.00	60099.99
*	61100.000	7500.00	2549.67	2545.00	4.67	2212.47	3.39	847.34	1735.73	.00	7500.00	.00	60099.99
*	61100.000	10000.00	2550.24	2545.00	5.24	2862.00	3.65	1589.06	1866.00	.00	9912.11	87.89	60100.00
*	61100.000	12500.00	2550.70	2545.00	5.70	3640.43	3.74	1765.43	1995.19	.00	11942.99	557.01	60100.00
*	61100.000	15000.00	2551.05	2545.00	6.05	4281.79	3.87	1898.46	2166.36	.00	13868.83	1131.17	60100.00
*	61100.000	17500.00	2551.36	2545.00	6.36	4883.76	3.98	2015.36	2229.37	.00	15721.26	1778.74	60100.00
*	61100.000	20000.00	2551.63	2545.00	6.63	5442.32	4.08	2118.06	2245.83	.00	17537.70	2462.30	60100.00
*	61100.000	25000.00	2552.10	2545.00	7.10	6484.76	4.27	2297.48	2435.31	.00	21090.31	3909.68	60100.00
*	61100.000	30000.00	2552.51	2545.00	7.51	7457.85	4.43	2453.15	2622.44	.00	24572.62	5427.38	60100.00
*	64300.000	500.00	2551.08	2550.00	1.08	455.61	1.10	746.14	930.56	.00	500.00	.00	63300.00
*	64300.000	1000.00	2551.49	2550.00	1.49	817.69	1.22	995.61	1032.81	.00	1000.00	.00	63300.00
*	64300.000	2000.00	2551.99	2550.00	1.99	1384.81	1.44	1292.97	1282.23	.00	2000.00	.00	63300.00
*	64300.000	3000.00	2552.35	2550.00	2.35	1898.17	1.58	1512.55	1496.72	.00	3000.00	.00	63299.99
*	64300.000	4000.00	2552.66	2550.00	2.66	2379.84	1.68	1692.87	1590.13	.00	4000.00	.00	63300.00
*	64300.000	5000.00	2552.92	2550.00	2.92	2840.74	1.76	1849.02	1651.77	.00	5000.00	.00	63299.99
*	64300.000	7500.00	2553.47	2550.00	3.47	3941.12	1.90	2177.00	1858.18	.00	7500.00	.00	63299.99
*	64300.000	10000.00	2553.92	2550.00	3.92	4988.57	2.00	2448.73	2007.72	.00	10000.00	.00	63300.00
*	64300.000	12500.00	2554.30	2550.00	4.30	5970.59	2.09	2678.57	2146.69	.00	12500.00	.00	63300.00
*	64300.000	15000.00	2554.64	2550.00	4.64	6913.42	2.17	2882.03	2324.65	.00	15000.00	.00	63300.00
*	64300.000	17500.00	2554.92	2550.00	4.92	7764.12	2.25	3054.00	2391.97	.00	17500.00	.00	63300.00
*	64300.000	20000.00	2555.19	2550.00	5.19	8555.00	2.34	3119.63	2411.55	.00	20000.00	.00	63300.00
*	64300.000	25000.00	2555.67	2550.00	5.67	10066.58	2.48	3172.48	2606.11	.00	25000.00	.00	63300.00
*	64300.000	30000.00	2556.11	2550.00	6.11	11486.30	2.61	3221.33	2797.82	.00	30000.00	.00	63300.00
*	66700.000	500.00	2554.81	2552.50	2.31	223.23	2.24	193.66	961.33	.00	500.00	.00	65700.00
*	66700.000	1000.00	2555.53	2552.50	3.03	405.57	2.47	339.21	1073.32	.00	1000.00	.00	65700.00
*	66700.000	2000.00	2556.30	2552.50	3.80	746.52	2.68	533.08	1336.96	.00	2000.00	.00	65700.00
*	66700.000	3000.00	2556.76	2552.50	4.26	1017.16	2.95	646.85	1568.80	.00	3000.00	.00	65699.99
*	66700.000	4000.00	2557.11	2552.50	4.61	1257.38	3.18	733.19	1678.64	.00	4000.00	.00	65700.00
*	66700.000	5000.00	2557.41	2552.50	4.91	1487.75	3.36	807.36	1751.49	.00	5000.00	.00	65699.99
*	66700.000	7500.00	2558.02	2552.50	5.52	2032.10	3.69	960.12	1975.67	.00	7500.00	.00	65699.99
*	66700.000	10000.00	2558.52	2552.50	6.02	2537.07	3.94	1082.72	2136.87	.00	10000.00	.00	65700.00
*	66700.000	12500.00	2558.94	2552.50	6.44	3011.57	4.15	1186.44	2284.92	.00	12500.00	.00	65700.00
*	66700.000	15000.00	2559.30	2552.50	6.80	3458.95	4.34	1276.53	2470.64	.00	15000.00	.00	65700.00
*	66700.000	17500.00	2559.62	2552.50	7.12	3885.19	4.50	1356.82	2544.76	.00	17500.00	.00	65700.00
*	66700.000	20000.00	2559.92	2552.50	7.42	4297.88	4.65	1430.26	2569.45	.00	20000.00	.00	65700.00
*	66700.000	25000.00	2560.41	2552.50	7.91	5021.50	4.99	1540.95	2771.95	11.16	24987.54	1.30	65700.00
*	66700.000	30000.00	2560.84	2552.50	8.34	5706.24	5.32	1637.18	2970.08	75.26	29915.96	8.78	65700.00

	SECNO	Q	CWSEL	ELMIN	DEPTH	AREA	VCH	TOPWID	TWA	QLOB	QCH	QROB	CUMDS
*	68800.000	500.00	2556.78	2555.00	1.78	430.17	1.16	384.26	975.71	.00	500.00	.00	67800.00
*	68800.000	1000.00	2557.49	2555.00	2.49	746.10	1.34	498.75	1092.76	.00	1000.00	.00	67800.00
*	68800.000	2000.00	2558.38	2555.00	3.38	1253.29	1.60	641.13	1363.09	.00	2000.00	.00	67800.00
*	68800.000	3000.00	2559.00	2555.00	4.00	1680.00	1.79	740.00	1599.49	.00	3000.00	.00	67799.99
*	68800.000	4000.00	2559.49	2555.00	4.49	2060.60	1.94	818.16	1712.96	.00	4000.00	.00	67800.00
*	68800.000	5000.00	2559.87	2555.00	4.87	2389.18	2.09	880.08	1788.35	.00	5000.00	.00	67799.99
*	68800.000	7500.00	2560.59	2555.00	5.59	3043.50	2.47	948.99	2016.70	4.49	7493.77	1.74	67799.99
*	68800.000	10000.00	2561.16	2555.00	6.17	3605.09	2.81	997.09	2181.36	28.39	9960.57	11.04	67800.00
*	68800.000	12500.00	2561.66	2555.00	6.66	4105.18	3.11	1038.04	2332.45	74.26	12396.87	28.87	67800.00
*	68800.000	15000.00	2562.09	2555.00	7.09	4561.79	3.38	1074.07	2520.88	140.96	14804.25	54.79	67800.00
*	68800.000	17500.00	2562.47	2555.00	7.47	4981.76	3.64	1106.18	2597.48	226.34	17185.69	87.98	67800.00
*	68800.000	20000.00	2562.83	2555.00	7.83	5376.36	3.87	1135.51	2624.47	329.37	19542.60	128.02	67800.00
*	68800.000	25000.00	2563.45	2555.00	8.45	6099.14	4.32	1187.37	2830.79	581.62	24192.31	226.07	67800.00
*	68800.000	30000.00	2564.01	2555.00	9.01	6774.20	4.71	1233.84	3032.21	893.79	28758.81	347.40	67800.00
	71500.000	500.00	2559.43	2557.00	2.43	345.33	1.45	283.86	996.42	.00	500.00	.00	70500.00
*	71500.000	1000.00	2560.22	2557.00	3.22	606.09	1.65	396.35	1121.65	.00	1000.00	.00	70500.00
*	71500.000	2000.00	2561.18	2557.00	4.18	1089.86	1.84	602.92	1403.88	.00	2000.00	.00	70500.00
*	71500.000	3000.00	2561.82	2557.00	4.82	1514.83	1.98	738.13	1648.55	.00	3000.00	.00	70499.99
*	71500.000	4000.00	2562.31	2557.00	5.31	1904.38	2.10	843.23	1768.22	.00	4000.00	.00	70500.00
*	71500.000	5000.00	2562.73	2557.00	5.73	2269.54	2.20	931.04	1848.65	.00	5000.00	.00	70499.99
	71500.000	7500.00	2563.38	2557.00	6.38	2930.66	2.56	1071.88	2079.33	.00	7500.00	.00	70499.99
	71500.000	10000.00	2564.03	2557.00	7.03	3662.29	2.73	1208.75	2249.73	.00	10000.00	.00	70500.00
*	71500.000	12500.00	2564.80	2557.00	7.80	4646.25	2.69	1371.46	2412.87	.00	12500.00	.00	70500.00
*	71500.000	15000.00	2565.30	2557.00	8.30	5367.26	2.79	1434.08	2608.05	.00	15000.00	.00	70500.00
*	71500.000	17500.00	2565.73	2557.00	8.73	5981.73	2.93	1458.86	2687.44	.00	17500.00	.00	70500.00
*	71500.000	20000.00	2566.11	2557.00	9.11	6550.62	3.05	1481.44	2714.80	.00	20000.00	.00	70500.00
*	71500.000	25000.00	2566.83	2557.00	9.83	7625.27	3.28	1523.16	2921.37	.00	25000.00	.00	70500.00
*	71500.000	30000.00	2567.48	2557.00	10.48	8629.40	3.48	1561.15	3123.44	.00	30000.00	.00	70500.00
*	75000.000	500.00	2560.84	2560.00	.84	552.22	.91	701.81	1035.43	.00	500.00	.00	74000.00
*	75000.000	1000.00	2561.47	2560.00	1.47	1014.48	.99	776.84	1166.50	.00	1000.00	.00	73999.99
*	75000.000	2000.00	2562.40	2560.00	2.40	1788.77	1.12	888.43	1458.83	.00	2000.00	.00	73999.99
*	75000.000	3000.00	2563.08	2560.00	3.08	2414.42	1.24	969.26	1710.65	.00	3000.00	.00	73999.98
*	75000.000	4000.00	2563.63	2560.00	3.63	2964.19	1.35	1035.09	1836.08	.00	4000.00	.00	73999.99
*	75000.000	5000.00	2564.06	2560.00	4.06	3425.61	1.46	1087.27	1919.54	.00	5000.00	.00	73999.99
*	75000.000	7500.00	2564.92	2560.00	4.92	4403.42	1.70	1190.30	2156.32	.00	7500.00	.00	73999.99
*	75000.000	10000.00	2565.62	2560.00	5.62	5251.40	1.90	1218.64	2331.16	.00	10000.00	.00	74000.00
*	75000.000	12500.00	2566.29	2560.00	6.29	6071.50	2.06	1238.66	2499.34	.00	12500.00	.00	74000.00
*	75000.000	15000.00	2566.83	2560.00	6.83	6742.04	2.22	1254.80	2697.57	.00	15000.00	.00	74000.00
*	75000.000	17500.00	2567.30	2560.00	7.30	7344.68	2.38	1269.13	2779.16	.00	17500.00	.00	74000.00
*	75000.000	20000.00	2567.74	2560.00	7.74	7905.92	2.53	1282.32	2808.46	.00	20000.00	.00	74000.00
*	75000.000	25000.00	2568.55	2560.00	8.55	8944.95	2.79	1306.41	3018.46	.00	25000.00	.00	74000.00
*	75000.000	30000.00	2569.27	2560.00	9.27	9903.35	3.03	1328.23	3223.70	.00	30000.00	.00	74000.00

	SECNO	Q	CWSEL	ELMIN	DEPTH	AREA	VCH	TOPWID	TWA	QLOB	QCH	QROB	CUMDS
*	78500.000	500.00	2566.62	2565.00	1.62	326.70	1.53	355.87	1089.08	.00	500.00	.00	77500.00
*	78500.000	1000.00	2567.17	2565.00	2.17	549.39	1.82	459.64	1224.64	.00	1000.00	.00	77499.99
*	78500.000	2000.00	2567.87	2565.00	2.87	924.04	2.16	594.67	1525.24	.00	2000.00	.00	77499.99
*	78500.000	3000.00	2568.38	2565.00	3.38	1258.30	2.38	693.29	1783.90	.00	3000.00	.00	77499.98
*	78500.000	4000.00	2568.80	2565.00	3.80	1568.44	2.55	773.63	1915.19	.00	4000.00	.00	77499.99
*	78500.000	5000.00	2569.17	2565.00	4.17	1858.73	2.69	841.91	2003.74	.00	5000.00	.00	77499.99
*	78500.000	7500.00	2569.91	2565.00	4.91	2534.48	2.96	982.65	2250.99	.00	7500.00	.00	77499.99
*	78500.000	10000.00	2570.45	2565.00	5.45	3078.28	3.25	1012.61	2432.03	.00	10000.00	.00	77500.00
*	78500.000	12500.00	2570.90	2565.00	5.90	3535.99	3.54	1025.19	2599.87	.00	12500.00	.00	77500.00
*	78500.000	15000.00	2571.31	2565.00	6.31	3958.84	3.79	1036.68	2798.04	.00	15000.00	.00	77500.00
*	78500.000	17500.00	2571.69	2565.00	6.69	4358.76	4.01	1047.42	2879.83	.00	17500.00	.00	77500.00
*	78500.000	20000.00	2572.06	2565.00	7.06	4739.82	4.22	1057.56	2909.45	.00	20000.00	.00	77500.00
*	78500.000	25000.00	2572.73	2565.00	7.73	5462.21	4.58	1076.51	3120.32	.00	25000.00	.00	77500.00
*	78500.000	30000.00	2573.36	2565.00	8.36	6139.17	4.89	1093.98	3326.55	.00	30000.00	.00	77500.00
	80500.000	500.00	2570.71	2570.00	.71	370.37	1.35	542.63	1109.71	.00	500.00	.00	79500.00
	80500.000	1000.00	2571.10	2570.00	1.10	584.14	1.71	565.77	1248.18	.00	1000.00	.00	79499.99
	80500.000	2000.00	2571.68	2570.00	1.68	921.84	2.17	600.52	1552.67	.00	2000.00	.00	79499.99
	80500.000	3000.00	2572.14	2570.00	2.14	1201.80	2.50	627.87	1814.23	.00	3000.00	.00	79499.98
*	80500.000	4000.00	2572.35	2570.00	2.35	1339.64	2.99	640.90	1944.44	.00	4000.00	.00	79499.99
*	80500.000	5000.00	2572.69	2570.00	2.69	1561.56	3.20	661.35	2034.75	.00	5000.00	.00	79499.99
*	80500.000	7500.00	2573.45	2570.00	3.45	2080.83	3.60	706.89	2283.50	.00	7500.00	.00	79499.99
*	80500.000	10000.00	2574.05	2570.00	4.05	2514.75	3.98	742.81	2466.72	.00	10000.00	.00	79500.00
*	80500.000	12500.00	2574.57	2570.00	4.57	2911.98	4.29	774.23	2636.55	.00	12500.00	.00	79500.00
*	80500.000	15000.00	2575.03	2570.00	5.03	3269.96	4.59	803.09	2836.87	.00	15000.00	.00	79500.00
*	80500.000	17500.00	2575.41	2570.00	5.41	3589.39	4.89	850.98	2920.99	4.71	17494.16	1.13	79500.00
*	80500.000	20000.00	2575.77	2570.00	5.77	3904.09	5.16	895.66	2952.78	25.32	19968.61	6.07	79500.00
*	80500.000	25000.00	2576.43	2570.00	6.43	4518.33	5.66	977.01	3167.68	131.44	24837.03	31.53	79500.00
*	80500.000	30000.00	2577.02	2570.00	7.02	5113.88	6.09	1049.88	3377.59	331.48	29589.01	79.51	79500.00
	84000.000	500.00	2576.37	2575.00	1.37	403.80	1.24	438.29	1149.12	.00	500.00	.00	83000.00
	84000.000	1000.00	2576.87	2575.00	1.87	648.27	1.54	542.93	1292.72	.00	1000.00	.00	82999.99
*	84000.000	2000.00	2577.47	2575.00	2.47	1005.86	1.99	667.05	1611.05	.00	2000.00	.00	82999.99
*	84000.000	3000.00	2577.98	2575.00	2.98	1376.78	2.18	775.08	1878.45	.00	3000.00	.00	82999.98
*	84000.000	4000.00	2578.38	2575.00	3.38	1707.51	2.34	860.03	2018.06	.00	4000.00	.00	82999.99
*	84000.000	5000.00	2578.73	2575.00	3.73	2022.39	2.47	933.76	2112.66	.00	5000.00	.00	82999.99
*	84000.000	7500.00	2579.48	2575.00	4.48	2774.31	2.70	1089.82	2369.97	.00	7500.00	.00	82999.99
*	84000.000	10000.00	2580.08	2575.00	5.08	3466.57	2.88	1204.19	2560.08	.00	10000.00	.00	83000.00
*	84000.000	12500.00	2580.54	2575.00	5.54	4022.66	3.11	1229.33	2730.77	.00	12500.00	.00	83000.00
*	84000.000	15000.00	2580.97	2575.00	5.97	4566.06	3.29	1253.40	2931.24	.00	15000.00	.00	83000.00
*	84000.000	17500.00	2581.37	2575.00	6.37	5067.03	3.45	1275.20	3016.03	.00	17500.00	.00	83000.00
*	84000.000	20000.00	2581.74	2575.00	6.74	5552.26	3.60	1295.95	3048.65	.00	20000.00	.00	83000.00
*	84000.000	25000.00	2582.45	2575.00	7.45	6478.38	3.86	1334.68	3265.35	.00	25000.00	.00	83000.00
*	84000.000	30000.00	2583.10	2575.00	8.10	7359.08	4.08	1370.49	3477.13	.00	30000.00	.00	83000.00

	SECNO	Q	CWSEL	ELMIN	DEPTH	AREA	VCH	TOPWID	TWA	QLOB	QCH	QROB	CUMDS
	87500.000	500.00	2581.48	2580.00	1.48	333.49	1.50	351.26	1180.84	.00	500.00	.00	86500.00
	87500.000	1000.00	2582.07	2580.00	2.07	570.59	1.75	451.66	1332.67	.00	1000.00	.00	86499.99
	87500.000	2000.00	2582.88	2580.00	2.88	997.57	2.00	590.91	1661.59	.00	2000.00	.00	86499.99
	87500.000	3000.00	2583.41	2580.00	3.41	1329.49	2.26	679.73	1936.89	.00	3000.00	.00	86499.98
	87500.000	4000.00	2583.84	2580.00	3.84	1639.10	2.44	753.19	2082.87	.00	4000.00	.00	86499.99
	87500.000	5000.00	2584.21	2580.00	4.21	1926.12	2.60	815.40	2182.93	.00	5000.00	.00	86499.99
*	87500.000	7500.00	2584.96	2580.00	4.96	2585.95	2.90	942.99	2452.09	.00	7500.00	.00	86499.99
*	87500.000	10000.00	2585.49	2580.00	5.49	3098.99	3.24	1000.23	2649.28	2.01	9993.76	4.22	86499.99
*	87500.000	12500.00	2585.93	2580.00	5.93	3553.88	3.55	1046.17	2823.79	11.45	12464.50	24.05	86500.00
*	87500.000	15000.00	2586.33	2580.00	6.34	3984.49	3.83	1087.87	3027.86	30.10	14906.66	63.23	86500.00
*	87500.000	17500.00	2586.71	2580.00	6.71	4396.96	4.08	1126.37	3115.95	58.34	17319.11	122.55	86500.00
*	87500.000	20000.00	2587.05	2580.00	7.05	4792.24	4.31	1162.07	3151.74	95.85	19702.83	201.32	86500.00
*	87500.000	25000.00	2587.68	2580.00	7.68	5544.40	4.71	1227.13	3374.42	197.32	24388.21	414.47	86500.00
*	87500.000	30000.00	2588.25	2580.00	8.25	6252.90	5.08	1285.40	3591.78	330.91	28974.03	695.06	86500.00
	89600.000	500.00	2585.58	2585.00	.58	430.33	1.16	786.83	1208.27	.00	500.00	.00	88600.00
	89600.000	1000.00	2585.89	2585.00	.89	682.72	1.46	833.56	1363.65	.00	1000.00	.00	88599.99
	89600.000	2000.00	2586.36	2585.00	1.36	1090.60	1.83	903.98	1697.63	.00	2000.00	.00	88599.99
	89600.000	3000.00	2586.77	2585.00	1.77	1480.35	2.03	966.49	1976.57	.00	3000.00	.00	88599.98
*	89600.000	4000.00	2586.94	2585.00	1.94	1636.34	2.44	990.41	2123.16	.00	4000.00	.00	88599.99
*	89600.000	5000.00	2587.23	2585.00	2.23	1938.49	2.58	1035.16	2225.71	.00	5000.00	.00	88599.99
*	89600.000	7500.00	2587.89	2585.00	2.89	2649.01	2.83	1133.45	2500.11	.00	7500.00	.00	88599.99
*	89600.000	10000.00	2588.45	2585.00	3.45	3306.44	3.02	1217.35	2699.87	.00	10000.00	.00	88599.99
*	89600.000	12500.00	2588.93	2585.00	3.93	3907.08	3.20	1289.23	2876.74	.00	12500.00	.00	88600.00
*	89600.000	15000.00	2589.36	2585.00	4.37	4481.50	3.35	1354.42	3083.17	.00	15000.00	.00	88600.00
*	89600.000	17500.00	2589.76	2585.00	4.76	5036.86	3.47	1414.59	3173.18	.00	17500.00	.00	88600.00
*	89600.000	20000.00	2590.13	2585.00	5.13	5561.63	3.60	1462.18	3210.57	.00	20000.00	.00	88600.00
*	89600.000	25000.00	2590.80	2585.00	5.80	6569.94	3.81	1526.28	3435.96	.00	25000.00	.00	88600.00
*	89600.000	30000.00	2591.42	2585.00	6.42	7531.59	3.98	1585.01	3655.71	.00	30000.00	.00	88600.00
	92000.000	500.00	2590.57	2590.00	.57	448.53	1.11	807.59	1252.19	.00	500.00	.00	91000.00
	92000.000	1000.00	2590.84	2590.00	.84	676.15	1.48	835.30	1409.63	.00	1000.00	.00	90999.99
	92000.000	2000.00	2591.27	2590.00	1.27	1028.67	1.94	876.49	1746.67	.00	2000.00	.00	90999.99
*	92000.000	3000.00	2591.65	2590.00	1.65	1377.56	2.18	915.43	2027.50	.00	3000.00	.00	90999.98
	92000.000	4000.00	2591.96	2590.00	1.96	1662.97	2.41	946.09	2176.50	.00	4000.00	.00	90999.99
	92000.000	5000.00	2592.20	2590.00	2.20	1897.87	2.63	970.61	2280.96	.00	5000.00	.00	90999.99
*	92000.000	7500.00	2592.77	2590.00	2.77	2458.91	3.05	1026.78	2558.46	.00	7500.00	.00	90999.99
*	92000.000	10000.00	2593.26	2590.00	3.26	2967.20	3.37	1075.15	2761.17	.00	10000.00	.00	90999.99
*	92000.000	12500.00	2593.69	2590.00	3.69	3444.42	3.63	1118.65	2940.71	.00	12500.00	.00	91000.00
*	92000.000	15000.00	2594.08	2590.00	4.08	3892.97	3.85	1158.06	3149.78	.00	15000.00	.00	91000.00
*	92000.000	17500.00	2594.44	2590.00	4.44	4312.40	4.06	1193.73	3242.25	.00	17500.00	.00	91000.00
*	92000.000	20000.00	2594.77	2590.00	4.77	4715.17	4.24	1227.00	3281.82	.00	20000.00	.00	91000.00
*	92000.000	25000.00	2595.35	2590.00	5.35	5444.09	4.59	1264.13	3509.86	.00	25000.00	.00	91000.00
*	92000.000	30000.00	2595.87	2590.00	5.87	6106.24	4.91	1284.91	3731.44	.00	30000.00	.00	91000.00

	SECNO	Q	CWSEL	ELMIN	DEPTH	AREA	VCH	TOPWID	TWA	QLOB	QCH	QROB	CUMDS
	93800.000	500.00	2595.42	2595.00	.42	393.16	1.27	971.43	1288.95	.00	500.00	.00	92800.00
	93800.000	1000.00	2595.66	2595.00	.66	625.01	1.60	1011.19	1447.78	.00	1000.00	.00	92799.99
	93800.000	2000.00	2596.02	2595.00	1.02	997.55	2.00	1071.99	1786.93	.00	2000.00	.00	92799.99
	93800.000	3000.00	2596.26	2595.00	1.26	1266.51	2.37	1113.83	2069.43	.00	3000.00	.00	92799.98
	93800.000	4000.00	2596.50	2595.00	1.50	1537.59	2.60	1154.46	2219.90	.00	4000.00	.00	92799.99
	93800.000	5000.00	2596.73	2595.00	1.73	1813.12	2.76	1194.35	2325.69	.00	5000.00	.00	92799.99
	93800.000	7500.00	2597.22	2595.00	2.22	2422.49	3.10	1278.14	2606.09	.00	7500.00	.00	92799.99
	93800.000	10000.00	2597.65	2595.00	2.65	2982.77	3.35	1350.61	2811.29	.00	10000.00	.00	92799.99
	93800.000	12500.00	2598.03	2595.00	3.03	3513.98	3.56	1415.89	2993.08	.00	12500.00	.00	92800.00
	93800.000	15000.00	2598.38	2595.00	3.38	4013.26	3.74	1474.62	3204.17	.00	15000.00	.00	92800.00
*	93800.000	17500.00	2598.77	2595.00	3.77	4593.61	3.81	1540.07	3299.30	.00	17500.00	.00	92800.00
*	93800.000	20000.00	2599.06	2595.00	4.06	5057.92	3.95	1590.50	3340.69	.00	20000.00	.00	92800.00
*	93800.000	25000.00	2599.61	2595.00	4.61	5948.21	4.20	1682.97	3572.30	.00	25000.00	.00	92800.00
*	93800.000	30000.00	2600.09	2595.00	5.09	6786.11	4.42	1760.28	3795.91	.00	30000.00	.00	92800.00
*	96200.000	500.00	2599.80	2598.00	1.80	445.40	1.12	494.95	1329.35	.00	500.00	.00	95200.00
*	96200.000	1000.00	2600.25	2598.00	2.25	685.14	1.46	571.69	1491.38	.00	999.76	.24	95199.99
*	96200.000	2000.00	2600.82	2598.00	2.82	1029.17	1.96	623.50	1833.64	.00	1993.29	6.71	95199.99
*	96200.000	3000.00	2601.29	2598.00	3.29	1332.78	2.28	665.88	2118.46	.00	2977.02	22.98	95199.98
*	96200.000	4000.00	2601.66	2598.00	3.66	1585.40	2.56	699.19	2270.97	.00	3953.55	46.45	95199.99
*	96200.000	5000.00	2601.97	2598.00	3.97	1804.75	2.82	726.88	2378.62	.00	4924.43	75.57	95199.99
*	96200.000	7500.00	2602.19	2598.00	4.19	1973.38	3.87	747.47	2676.28	.00	7366.53	133.47	95199.99
*	96200.000	10000.00	2602.78	2598.00	4.78	2422.31	4.23	799.70	2885.90	.00	9752.58	247.42	95199.99
*	96200.000	12500.00	2603.25	2598.00	5.25	2811.78	4.57	842.39	3070.67	.00	12119.33	380.67	95200.00
*	96200.000	15000.00	2603.68	2598.00	5.68	3181.20	4.86	880.97	3283.30	.00	14466.41	533.59	95200.00
*	96200.000	17500.00	2604.07	2598.00	6.07	3533.98	5.11	916.31	3380.04	.00	16796.59	703.41	95200.00
*	96200.000	20000.00	2604.43	2598.00	6.43	3863.53	5.35	948.12	3423.28	.00	19114.22	885.78	95200.00
*	96200.000	25000.00	2605.06	2598.00	7.06	4480.80	5.79	1005.01	3658.55	.00	23714.45	1285.55	95200.00
*	96200.000	30000.00	2605.62	2598.00	7.62	5056.75	6.17	1055.33	3885.61	.00	28274.55	1725.45	95200.00
*	97700.000	500.00	2601.80	2600.00	1.80	260.82	1.92	189.95	1338.94	.00	500.00	.00	96700.00
*	97700.000	1000.00	2602.50	2600.00	2.50	405.65	2.47	224.87	1502.82	.00	1000.00	.00	96699.99
*	97700.000	2000.00	2603.42	2600.00	3.42	632.80	3.16	270.70	1847.45	.00	2000.00	.00	96699.99
*	97700.000	3000.00	2604.08	2600.00	4.08	823.74	3.64	303.93	2133.91	.00	3000.00	.00	96699.98
*	97700.000	4000.00	2604.62	2600.00	4.62	995.73	4.02	331.02	2287.69	.00	4000.00	.00	96699.99
*	97700.000	5000.00	2605.08	2600.00	5.08	1154.08	4.33	352.76	2396.38	.00	5000.00	.00	96699.99
*	97700.000	7500.00	2605.92	2600.00	5.92	1459.59	5.18	380.53	2695.59	10.40	7485.16	4.44	96699.99
*	97700.000	10000.00	2606.58	2600.00	6.58	1721.01	5.92	402.78	2906.39	46.27	9933.95	19.78	96699.99
*	97700.000	12500.00	2607.16	2600.00	7.16	1958.83	6.56	422.01	3092.07	108.93	12344.52	46.56	96700.00
*	97700.000	15000.00	2607.67	2600.00	7.67	2178.39	7.15	439.01	3305.55	196.52	14719.48	84.00	96700.00
*	97700.000	17500.00	2608.12	2600.00	8.12	2382.51	7.69	454.24	3403.08	306.48	17062.53	130.99	96700.00
*	97700.000	20000.00	2608.54	2600.00	8.54	2574.25	8.19	468.10	3447.08	436.75	19376.58	186.67	96700.00
*	97700.000	25000.00	2609.27	2600.00	9.27	2927.96	9.12	492.64	3683.74	751.07	23927.92	321.01	96700.00
*	97700.000	30000.00	2609.91	2600.00	9.91	3244.50	9.99	513.61	3912.07	1123.41	28396.43	480.16	96700.00

SECNO	Q	CWSEL	ELMIN	DEPTH	AREA	VCH	TOPWID	TWA	QLOB	QCH	QROB	CUMDS
* 101000.000	500.00	2610.31	2608.00	2.31	450.40	1.11	811.40	1367.16	.00	500.00		.00100000.00
* 101000.000	1000.00	2610.57	2608.00	2.57	658.61	1.52	820.75	1551.81	.00	1000.00		.00 99999.99
* 101000.000	2000.00	2610.98	2608.00	2.98	1001.39	2.00	835.92	1893.03	.00	2000.00		.00 99999.99
* 101000.000	3000.00	2611.31	2608.00	3.31	1290.69	2.32	848.52	2179.73	.00	3000.00		.00 99999.98
* 101000.000	4000.00	2611.62	2608.00	3.62	1551.35	2.58	859.71	2334.15	.00	4000.00		.00 99999.99
* 101000.000	5000.00	2611.91	2608.00	3.91	1792.04	2.79	869.91	2443.59	.00	5000.00		.00 99999.99
* 101000.000	7500.00	2612.53	2608.00	4.53	2341.59	3.20	892.78	2744.31	.00	7500.00		.00 99999.99
* 101000.000	10000.00	2613.10	2608.00	5.10	2849.80	3.51	913.41	2956.44	.00	10000.00		.00 99999.99
* 101000.000	12500.00	2613.63	2608.00	5.63	3337.04	3.75	932.77	3143.33	.00	12500.00		.00100000.00
* 101000.000	15000.00	2614.13	2608.00	6.13	3811.95	3.93	951.25	3357.93	.00	15000.00		.00100000.00
* 101000.000	17500.00	2614.62	2608.00	6.62	4278.67	4.09	969.07	3456.52	.00	17500.00		.00100000.00
* 101000.000	20000.00	2615.09	2608.00	7.09	4737.92	4.22	986.30	3501.50	.00	20000.00		.00100000.00
* 101000.000	25000.00	2615.98	2608.00	7.98	5635.36	4.44	1019.11	3739.99	.00	25000.00		.00100000.00
* 101000.000	30000.00	2616.83	2608.00	8.83	6511.62	4.61	1050.17	3969.97	.00	30000.00		.00100000.00
* 103650.000	500.00	2611.26	2610.00	1.26	1002.01	.50	838.32	1417.34	.00	500.00		.00102650.00
* 103650.000	1000.00	2611.53	2610.00	1.53	1231.97	.81	857.31	1595.31	.00	1000.00		.00102650.00
* 103650.000	2000.00	2612.20	2610.00	2.20	1822.23	1.10	904.22	1936.16	.00	2000.00		.00102650.00
* 103650.000	3000.00	2612.74	2610.00	2.74	2319.60	1.29	941.94	2225.56	.00	3000.00		.00102650.00
* 103650.000	4000.00	2613.19	2610.00	3.19	2752.17	1.45	973.55	2382.14	.00	4000.00		.00102650.00
* 103650.000	5000.00	2613.59	2610.00	3.59	3141.96	1.59	1001.19	2493.40	.00	5000.00		.00102650.00
* 103650.000	7500.00	2614.42	2610.00	4.42	3997.40	1.88	1059.31	2797.83	.00	7500.00		.00102650.00
* 103650.000	10000.00	2615.10	2610.00	5.10	4739.33	2.11	1103.63	3012.44	.00	10000.00		.00102650.00
* 103650.000	12500.00	2615.70	2610.00	5.70	5402.42	2.31	1124.46	3201.01	.00	12500.00		.00102650.00
* 103650.000	15000.00	2616.25	2610.00	6.25	6022.32	2.49	1143.60	3417.09	.00	15000.00		.00102650.00
* 103650.000	17500.00	2616.75	2610.00	6.75	6607.56	2.65	1161.37	3517.02	.00	17500.00		.00102650.00
* 103650.000	20000.00	2617.23	2610.00	7.23	7164.43	2.79	1178.03	3563.26	.00	20000.00		.00102650.00
* 103650.000	25000.00	2618.12	2610.00	8.12	8226.31	3.04	1209.17	3804.01	.00	25000.00		.00102650.00
* 103650.000	30000.00	2618.94	2610.00	8.94	9235.43	3.25	1238.03	4036.04	.00	30000.00		.00102650.00
* 106250.000	500.00	2612.15	2610.00	2.15	405.36	1.23	328.47	1460.77	.00	500.00		.00105250.00
* 106250.000	1000.00	2612.81	2610.00	2.81	650.02	1.54	414.13	1643.70	.00	1000.00		.00105250.00
* 106250.000	2000.00	2613.68	2610.00	3.68	1062.93	1.88	528.07	1993.38	.00	2000.00		.00105250.00
* 106250.000	3000.00	2614.34	2610.00	4.34	1437.62	2.09	613.42	2288.40	.00	3000.00		.00105250.00
* 106250.000	4000.00	2614.87	2610.00	4.87	1786.01	2.24	683.27	2448.09	.00	4000.00		.00105250.00
* 106250.000	5000.00	2615.33	2610.00	5.33	2106.77	2.37	717.98	2561.82	.00	5000.00		.00105250.00
* 106250.000	7500.00	2616.23	2610.00	6.23	2776.27	2.70	767.55	2869.40	.00	7500.00		.00105250.00
* 106250.000	10000.00	2616.97	2610.00	6.97	3359.13	2.98	808.24	3084.26	.00	10000.00		.00105250.00
* 106250.000	12500.00	2617.61	2610.00	7.61	3891.69	3.21	843.70	3273.05	.00	12500.00		.00105250.00
* 106250.000	15000.00	2618.20	2610.00	8.20	4392.71	3.41	875.76	3489.72	.00	15000.00		.00105250.00
* 106250.000	17500.00	2618.73	2610.00	8.73	4870.13	3.59	905.24	3590.43	.00	17500.00		.00105250.00
* 106250.000	20000.00	2619.23	2610.00	9.23	5328.72	3.75	932.69	3637.52	.00	20000.00		.00105250.00
* 106250.000	25000.00	2620.15	2610.00	10.15	6207.83	4.03	983.16	3880.09	.00	25000.00		.00105250.00
* 106250.000	30000.00	2620.98	2610.00	10.98	7048.91	4.26	1029.14	4113.97	.00	30000.00		.00105250.00

SECNO	Q	CWSEL	ELMIN	DEPTH	AREA	VCH	TOPWID	TWA	QLOB	QCH	QROB	CUMDS
* 107800.000	500.00	2615.70	2613.50	2.20	234.15	2.14	198.83	1469.86	.00	500.00	.00	106800.00
* 107800.000	1000.00	2616.36	2613.50	2.86	380.90	2.63	245.10	1654.88	.00	1000.00	.00	106800.00
* 107800.000	2000.00	2617.23	2613.50	3.73	621.64	3.22	306.24	2007.45	.00	2000.00	.00	106800.00
* 107800.000	3000.00	2617.86	2613.50	4.36	827.65	3.62	350.17	2304.62	.00	3000.00	.00	106800.00
* 107800.000	4000.00	2618.37	2613.50	4.87	1014.50	3.94	385.72	2466.08	.00	4000.00	.00	106800.00
* 107800.000	5000.00	2618.80	2613.50	5.30	1187.92	4.21	416.00	2581.21	.00	5000.00	.00	106800.00
* 107800.000	7500.00	2619.70	2613.50	6.20	1589.81	4.72	478.88	2891.40	.00	7500.00	.00	106800.00
* 107800.000	10000.00	2620.43	2613.50	6.93	1959.84	5.10	530.22	3108.32	.00	10000.00	.00	106800.00
* 107800.000	12500.00	2621.06	2613.50	7.56	2309.24	5.41	574.49	3298.84	.00	12500.00	.00	106800.00
* 107800.000	15000.00	2621.63	2613.50	8.13	2643.92	5.67	613.92	3517.04	.00	15000.00	.00	106800.00
* 107800.000	17500.00	2622.14	2613.50	8.64	2967.24	5.90	649.74	3619.11	.00	17500.00	.00	106800.00
* 107800.000	20000.00	2622.61	2613.50	9.11	3281.66	6.09	682.78	3667.45	.00	20000.00	.00	106800.00
* 107800.000	25000.00	2623.46	2613.50	9.96	3890.28	6.43	742.56	3912.26	.00	25000.00	.00	106800.00
* 107800.000	30000.00	2624.23	2613.50	10.73	4478.93	6.70	796.12	4148.13	.00	30000.00	.00	106800.00
* 109900.000	500.00	2620.01	2617.50	2.51	252.99	1.98	201.49	1480.00	.00	500.00	.00	108900.00
* 109900.000	1000.00	2620.80	2617.50	3.30	443.79	2.25	280.64	1668.54	.00	1000.00	.00	108900.00
* 109900.000	2000.00	2621.77	2617.50	4.27	760.28	2.63	376.90	2025.43	.00	2000.00	.00	108900.00
* 109900.000	3000.00	2622.45	2617.50	4.95	1038.26	2.89	444.58	2325.53	.00	3000.00	.00	108900.00
* 109900.000	4000.00	2623.00	2617.50	5.50	1298.41	3.08	499.68	2489.32	.00	4000.00	.00	108900.00
* 109900.000	5000.00	2623.47	2617.50	5.97	1543.09	3.24	546.46	2606.41	.00	5000.00	.00	108900.00
* 109900.000	7500.00	2624.43	2617.50	6.93	2117.36	3.54	643.02	2920.61	.00	7500.00	.00	108900.00
* 109900.000	10000.00	2625.17	2617.50	7.67	2616.45	3.82	704.97	3140.26	.04	9999.89	.07	108900.00
* 109900.000	12500.00	2625.72	2617.50	8.22	3010.88	4.16	721.56	3331.53	1.82	12494.52	3.65	108900.00
* 109900.000	15000.00	2626.22	2617.50	8.72	3379.18	4.46	736.72	3550.49	7.50	14977.45	15.05	108900.00
* 109900.000	17500.00	2626.69	2617.50	9.19	3727.63	4.73	750.77	3653.36	17.76	17446.62	35.61	108900.00
* 109900.000	20000.00	2627.13	2617.50	9.63	4056.35	4.99	763.79	3702.50	32.64	19901.92	65.44	108900.00
* 109900.000	25000.00	2627.92	2617.50	10.42	4667.99	5.46	787.45	3948.87	75.91	24771.89	152.20	108900.00
* 109900.000	30000.00	2628.62	2617.50	11.12	5233.23	5.88	808.70	4186.23	136.26	29590.54	273.20	108900.00
* 111700.000	500.00	2622.90	2620.30	2.60	287.13	1.74	221.07	1488.92	.00	500.00	.00	110700.00
* 111700.000	1000.00	2623.68	2620.30	3.38	485.70	2.06	287.53	1680.32	.00	1000.00	.00	110700.00
* 111700.000	2000.00	2624.68	2620.30	4.38	819.38	2.44	373.45	2040.87	.00	2000.00	.00	110700.00
* 111700.000	3000.00	2625.34	2620.30	5.04	1078.71	2.78	410.27	2342.85	.00	3000.00	.00	110700.00
111700.000	4000.00	2625.96	2620.30	5.66	1340.42	2.98	428.98	2508.51	.00	4000.00	.00	110700.00
111700.000	5000.00	2626.43	2620.30	6.13	1545.12	3.24	443.07	2626.85	.00	5000.00	.00	110700.00
* 111700.000	7500.00	2627.28	2620.30	6.98	1932.66	3.88	468.57	2942.32	.00	7500.00	.00	110700.00
* 111700.000	10000.00	2628.05	2620.30	7.75	2299.19	4.35	491.48	3162.81	.00	10000.00	.00	110700.00
* 111700.000	12500.00	2628.72	2620.30	8.42	2637.55	4.74	511.72	3355.08	.00	12500.00	.00	110700.00
* 111700.000	15000.00	2629.33	2620.30	9.03	2953.14	5.08	529.90	3574.92	.00	15000.00	.00	110700.00
* 111700.000	17500.00	2629.89	2620.30	9.59	3253.01	5.38	546.61	3678.55	.00	17500.00	.00	110700.00
* 111700.000	20000.00	2630.40	2620.30	10.10	3539.26	5.65	562.10	3728.37	.00	20000.00	.00	110700.00
* 111700.000	25000.00	2631.34	2620.30	11.04	4080.13	6.13	590.26	3975.92	.00	25000.00	.00	110700.00
* 111700.000	30000.00	2632.19	2620.30	11.89	4588.84	6.54	615.57	4214.30	.00	30000.00	.00	110700.00

SECNO	Q	CWSEL	ELMIN	DEPTH	AREA	VCH	TOPWID	TWA	QLOB	QCH	QROB	CUMDS
115300.000	500.00	2628.90	2627.00	1.90	329.69	1.52	347.69	1512.43	.00	500.00	.00	114300.00
* 115300.000	1000.00	2629.47	2627.00	2.47	558.79	1.79	452.65	1711.35	.00	1000.00	.00	114300.00
* 115300.000	2000.00	2630.16	2627.00	3.16	918.27	2.18	563.82	2078.91	.00	2000.00	.00	114300.00
* 115300.000	3000.00	2630.72	2627.00	3.72	1241.47	2.42	609.28	2383.99	.00	3000.00	.00	114300.00
* 115300.000	4000.00	2631.16	2627.00	4.16	1518.92	2.63	645.75	2552.39	.00	4000.00	.00	114300.00
* 115300.000	5000.00	2631.56	2627.00	4.56	1782.10	2.81	678.54	2673.01	.00	5000.00	.00	114300.00
* 115300.000	7500.00	2632.43	2627.00	5.43	2402.28	3.12	750.17	2993.38	.00	7500.00	.00	114300.00
* 115300.000	10000.00	2633.18	2627.00	6.18	2987.51	3.35	811.98	3217.98	.00	10000.00	.00	114300.00
* 115300.000	12500.00	2634.54	2627.00	7.54	4174.07	2.99	924.71	3452.26	.00	12500.00	.00	114300.00
* 115300.000	15000.00	2635.29	2627.00	8.29	5105.36	2.94	1774.49	3680.10	.00	15000.00	.00	114300.00
* 115300.000	17500.00	2635.62	2627.00	8.62	5689.91	3.08	1788.44	3783.68	.00	17500.00	.00	114300.00
* 115300.000	20000.00	2635.94	2627.00	8.94	6266.27	3.19	1802.08	3833.75	.00	20000.00	.00	114300.00
* 115300.000	25000.00	2636.57	2627.00	9.57	7405.79	3.38	1828.76	4082.29	.00	25000.00	.00	114300.00
* 115300.000	30000.00	2637.18	2627.00	10.18	8541.21	3.51	1854.96	4321.94	.00	30000.00	.00	114300.00
117400.000	500.00	2631.62	2630.00	1.62	435.04	1.15	438.99	1531.39	.00	500.00	.00	116400.00
* 117400.000	1000.00	2632.07	2630.00	2.07	657.21	1.52	534.82	1735.01	.00	1000.00	.00	116400.00
* 117400.000	2000.00	2632.83	2630.00	2.83	1122.29	1.78	693.80	2109.06	.00	2000.00	.00	116400.00
* 117400.000	3000.00	2633.37	2630.00	3.37	1532.14	1.96	808.39	2418.67	.00	3000.00	.00	116400.00
* 117400.000	4000.00	2633.82	2630.00	3.82	1916.47	2.09	902.73	2590.69	.00	4000.00	.00	116400.00
* 117400.000	5000.00	2634.21	2630.00	4.21	2280.55	2.19	983.78	2714.52	.00	5000.00	.00	116400.00
* 117400.000	7500.00	2634.99	2630.00	4.99	3117.70	2.41	1148.67	3039.95	.00	7500.00	.00	116400.00
* 117400.000	10000.00	2635.60	2630.00	5.60	3824.48	2.61	1187.90	3266.38	.00	10000.00	.00	116400.00
* 117400.000	12500.00	2636.30	2630.00	6.30	4667.26	2.68	1232.01	3503.64	.00	12500.00	.00	116400.00
* 117400.000	15000.00	2636.93	2630.00	6.93	5462.99	2.75	1272.26	3740.72	.00	15000.00	.00	116400.00
* 117400.000	17500.00	2637.38	2630.00	7.38	6032.96	2.90	1300.32	3849.16	.00	17500.00	.00	116400.00
* 117400.000	20000.00	2637.74	2630.00	7.74	6506.62	3.07	1323.19	3900.61	.00	20000.00	.00	116400.00
117400.000	25000.00	2638.63	2630.00	8.63	7713.58	3.24	1379.75	4159.63	.00	25000.00	.00	116400.00
117400.000	30000.00	2639.21	2630.00	9.21	8539.12	3.51	1417.14	4400.81	.00	30000.00	.00	116400.00
120100.000	500.00	2634.83	2634.00	.83	626.34	.80	1501.61	1591.53	.00	500.00	.00	119100.00
* 120100.000	1000.00	2635.02	2634.00	1.02	940.03	1.06	1804.00	1806.86	.00	1000.00	.00	119100.00
* 120100.000	2000.00	2635.39	2634.00	1.39	1620.05	1.23	1870.62	2186.06	.00	2000.00	.00	119100.00
* 120100.000	3000.00	2635.65	2634.00	1.65	2098.01	1.43	1916.06	2500.22	.00	3000.00	.00	119100.00
* 120100.000	4000.00	2635.89	2634.00	1.89	2578.82	1.55	1960.71	2676.23	.00	4000.00	.00	119100.00
* 120100.000	5000.00	2636.14	2634.00	2.14	3061.41	1.63	2004.52	2803.65	.00	5000.00	.00	119100.00
* 120100.000	7500.00	2636.72	2634.00	2.72	4257.04	1.76	2109.16	3135.91	.00	7500.00	.00	119100.00
* 120100.000	10000.00	2637.24	2634.00	3.24	5368.50	1.86	2201.97	3367.71	.00	10000.00	.00	119100.00
* 120100.000	12500.00	2637.77	2634.00	3.77	6556.97	1.91	2297.07	3610.43	.00	12500.00	.00	119100.00
* 120100.000	15000.00	2638.27	2634.00	4.27	7749.58	1.94	2388.69	3852.15	.00	15000.00	.00	119100.00
* 120100.000	17500.00	2638.71	2634.00	4.71	8802.21	1.99	2466.74	3963.83	.00	17500.00	.00	119100.00
* 120100.000	20000.00	2639.09	2634.00	5.09	9755.37	2.05	2535.34	4017.61	.00	20000.00	.00	119100.00
* 120100.000	25000.00	2639.88	2634.00	5.88	11835.49	2.11	2678.95	4280.76	.00	25000.00	.00	119100.00
* 120100.000	30000.00	2640.51	2634.00	6.51	13532.20	2.22	2725.48	4524.12	.00	30000.00	.00	119100.00

SECNO	Q	CWSEL	ELMIN	DEPTH	AREA	VCH	TOPWID	TWA	QLOB	QCH	QROB	CUMDS
* 122500.000	500.00	2640.25	2639.00	1.25	308.24	1.62	446.05	1645.97	.00	500.00	.00	121500.00
* 122500.000	1000.00	2640.66	2639.00	1.66	501.77	1.99	518.30	1871.90	.00	1000.00	.00	121500.00
* 122500.000	2000.00	2641.21	2639.00	2.21	811.38	2.46	616.52	2257.63	.00	2000.00	.00	121500.00
* 122500.000	3000.00	2641.59	2639.00	2.59	1059.24	2.83	685.07	2576.50	.00	3000.00	.00	121500.00
* 122500.000	4000.00	2641.91	2639.00	2.91	1288.27	3.10	742.82	2756.27	.00	4000.00	.00	121500.00
* 122500.000	5000.00	2642.18	2639.00	3.18	1500.44	3.33	792.56	2886.74	.00	5000.00	.00	121500.00
* 122500.000	7500.00	2642.76	2639.00	3.76	1994.63	3.76	897.81	3225.09	.00	7500.00	.00	121500.00
* 122500.000	10000.00	2643.25	2639.00	4.25	2449.18	4.08	984.74	3461.85	.00	10000.00	.00	121500.00
* 122500.000	12500.00	2643.66	2639.00	4.66	2870.54	4.35	1058.96	3709.07	.00	12500.00	.00	121500.00
* 122500.000	15000.00	2644.04	2639.00	5.04	3277.84	4.58	1126.06	3954.95	.00	15000.00	.00	121500.00
* 122500.000	17500.00	2644.38	2639.00	5.38	3667.73	4.77	1186.75	4070.52	.00	17500.00	.00	121500.00
* 122500.000	20000.00	2644.68	2639.00	5.68	4042.53	4.95	1242.30	4127.94	.00	20000.00	.00	121500.00
* 122500.000	25000.00	2645.22	2639.00	6.22	4750.30	5.26	1311.50	4397.70	.00	25000.00	.00	121500.00
* 122500.000	30000.00	2645.69	2639.00	6.69	5345.14	5.61	1333.98	4646.16	.00	30000.00	.00	121500.00
125500.000	500.00	2646.87	2645.00	1.87	348.46	1.43	373.34	1674.19	.00	500.00	.00	124500.00
125500.000	1000.00	2647.39	2645.00	2.39	573.26	1.74	478.86	1906.24	.00	1000.00	.00	124500.00
* 125500.000	2000.00	2647.91	2645.00	2.91	846.47	2.36	581.88	2303.54	.00	2000.00	.00	124500.00
* 125500.000	3000.00	2648.45	2645.00	3.45	1191.40	2.52	690.33	2629.86	.00	3000.00	.00	124500.00
* 125500.000	4000.00	2648.84	2645.00	3.84	1472.57	2.72	767.48	2815.43	.00	4000.00	.00	124500.00
* 125500.000	5000.00	2649.17	2645.00	4.17	1739.64	2.87	834.18	2950.35	.00	5000.00	.00	124500.00
* 125500.000	7500.00	2649.86	2645.00	4.86	2360.17	3.18	971.63	3297.75	.00	7500.00	.00	124500.00
* 125500.000	10000.00	2650.38	2645.00	5.38	2887.57	3.46	1036.54	3540.52	.00	10000.00	.00	124500.00
* 125500.000	12500.00	2650.82	2645.00	5.82	3353.40	3.73	1078.82	3790.41	.00	12500.00	.00	124500.00
* 125500.000	15000.00	2651.22	2645.00	6.22	3793.32	3.95	1117.28	4038.85	.00	15000.00	.00	124500.00
* 125500.000	17500.00	2651.59	2645.00	6.59	4210.61	4.16	1152.58	4158.63	.00	17500.00	.00	124500.00
* 125500.000	20000.00	2651.93	2645.00	6.93	4607.56	4.34	1185.18	4220.71	.00	20000.00	.00	124500.00
* 125500.000	25000.00	2652.54	2645.00	7.54	5347.30	4.68	1243.66	4498.68	.00	25000.00	.00	124500.00
* 125500.000	30000.00	2653.09	2645.00	8.09	6042.09	4.97	1296.18	4753.93	.00	30000.00	.00	124500.00
* 129500.000	500.00	2656.57	2655.00	1.57	244.52	2.04	210.31	1695.94	.00	500.00	.00	128500.00
* 129500.000	1000.00	2657.22	2655.00	2.22	396.92	2.52	256.06	1934.09	.00	1000.00	.00	128500.00
* 129500.000	2000.00	2658.10	2655.00	3.10	645.84	3.10	316.89	2339.03	.00	2000.00	.00	128500.00
* 129500.000	3000.00	2658.73	2655.00	3.73	862.24	3.48	361.54	2671.52	.00	3000.00	.00	128500.00
* 129500.000	4000.00	2659.25	2655.00	4.25	1057.67	3.78	397.59	2861.96	.00	4000.00	.00	128500.00
* 129500.000	5000.00	2659.69	2655.00	4.69	1238.73	4.04	428.28	3001.09	.00	5000.00	.00	128500.00
* 129500.000	7500.00	2660.54	2655.00	5.54	1625.89	4.61	470.00	3356.70	.00	7500.00	.00	128500.00
* 129500.000	10000.00	2661.22	2655.00	6.22	1951.27	5.12	494.73	3604.07	.00	10000.00	.00	128500.00
* 129500.000	12500.00	2661.81	2655.00	6.81	2249.71	5.56	516.38	3857.16	.00	12500.00	.00	128500.00
* 129500.000	15000.00	2662.34	2655.00	7.34	2528.83	5.93	535.83	4108.44	.00	15000.00	.00	128500.00
* 129500.000	17500.00	2662.83	2655.00	7.83	2791.86	6.27	553.54	4230.79	.00	17500.00	.00	128500.00
* 129500.000	20000.00	2663.27	2655.00	8.27	3041.99	6.57	569.86	4295.22	.00	20000.00	.00	128500.00
* 129500.000	25000.00	2664.08	2655.00	9.08	3512.42	7.12	599.37	4577.39	.00	25000.00	.00	128500.00
* 129500.000	30000.00	2664.80	2655.00	9.80	3951.32	7.59	625.64	4836.37	.00	30000.00	.00	128500.00

SECNO	Q	CWSEL	ELMIN	DEPTH	AREA	VCH	TOPWID	TWA	QLOB	QCH	QROB	CUMDS
131200.000	500.00	2661.35	2660.00	1.35	252.01	1.98	274.81	1705.41	.00	500.00		.00130200.00
131200.000	1000.00	2661.92	2660.00	1.92	430.39	2.32	349.15	1945.90	.00	1000.00		.00130200.00
* 131200.000	2000.00	2662.70	2660.00	2.70	741.63	2.70	450.36	2354.55	.00	2000.00		.00130200.00
* 131200.000	3000.00	2663.25	2660.00	3.25	1013.09	2.96	522.88	2689.50	.00	3000.00		.00130200.00
* 131200.000	4000.00	2663.71	2660.00	3.71	1265.36	3.16	582.23	2881.90	.00	4000.00		.00130200.00
* 131200.000	5000.00	2664.10	2660.00	4.10	1504.88	3.32	633.46	3022.72	.00	5000.00		.00130200.00
* 131200.000	7500.00	2664.91	2660.00	4.91	2061.75	3.64	738.96	3381.16	.00	7500.00		.00130200.00
* 131200.000	10000.00	2665.55	2660.00	5.55	2544.44	3.93	790.83	3630.06	.00	10000.00		.00130200.00
* 131200.000	12500.00	2666.11	2660.00	6.11	3005.42	4.16	833.41	3884.49	.00	12500.00		.00130200.00
* 131200.000	15000.00	2666.63	2660.00	6.63	3450.22	4.35	872.52	4136.99	.00	15000.00		.00130200.00
* 131200.000	17500.00	2667.12	2660.00	7.12	3883.20	4.51	908.97	4260.45	.00	17500.00		.00130200.00
* 131200.000	20000.00	2667.57	2660.00	7.57	4305.31	4.65	943.16	4325.93	.00	20000.00		.00130200.00
* 131200.000	25000.00	2668.41	2660.00	8.41	5123.86	4.88	1006.15	4610.02	.00	25000.00		.00130200.00
* 131200.000	30000.00	2669.18	2660.00	9.18	5912.80	5.07	1063.33	4870.71	.00	30000.00		.00130200.00
* 132800.000	500.00	2664.21	2662.00	2.21	286.41	1.75	258.51	1717.38	.00	500.00		.00131800.00
* 132800.000	1000.00	2664.90	2662.00	2.90	491.54	2.03	338.66	1961.00	.00	1000.00		.00131800.00
* 132800.000	2000.00	2665.74	2662.00	3.74	798.20	2.51	397.51	2371.79	.00	2000.00		.00131800.00
* 132800.000	3000.00	2666.34	2662.00	4.34	1053.04	2.85	437.20	2708.33	.00	3000.00		.00131800.00
* 132800.000	4000.00	2666.84	2662.00	4.84	1279.07	3.13	469.61	2902.13	.00	4000.00		.00131800.00
132800.000	5000.00	2667.39	2662.00	5.39	1549.19	3.23	505.61	3043.64	.00	5000.00		.00131800.00
132800.000	7500.00	2668.27	2662.00	6.27	2016.21	3.72	562.46	3405.07	.00	7500.00		.00131800.00
* 132800.000	10000.00	2668.87	2662.00	6.87	2361.18	4.24	601.00	3656.09	.00	10000.00		.00131800.00
* 132800.000	12500.00	2669.47	2662.00	7.47	2740.12	4.56	640.68	3912.22	.00	12500.00		.00131800.00
* 132800.000	15000.00	2670.02	2662.00	8.02	3099.54	4.84	676.16	4166.24	.00	15000.00		.00131800.00
* 132800.000	17500.00	2670.52	2662.00	8.52	3444.53	5.08	708.55	4291.03	.00	17500.00		.00131800.00
* 132800.000	20000.00	2670.98	2662.00	8.98	3776.95	5.30	738.41	4357.74	.00	20000.00		.00131800.00
* 132800.000	25000.00	2671.81	2662.00	9.81	4412.48	5.67	792.38	4644.06	.00	25000.00		.00131800.00
* 132800.000	30000.00	2672.55	2662.00	10.55	5017.04	5.98	840.52	4906.74	.00	30000.00		.00131800.00
* 137500.000	500.00	2669.67	2668.00	1.67	454.48	1.10	543.52	1761.70	.00	500.00		.00136500.00
* 137500.000	1000.00	2670.13	2668.00	2.13	738.28	1.35	655.41	2012.35	.00	1000.00		.00136500.00
* 137500.000	2000.00	2670.73	2668.00	2.73	1135.64	1.76	679.23	2426.85	.00	2000.00		.00136500.00
* 137500.000	3000.00	2671.23	2668.00	3.23	1480.77	2.03	699.26	2766.38	.00	3000.00		.00136500.00
* 137500.000	4000.00	2671.68	2668.00	3.68	1794.55	2.23	716.98	2962.67	.00	4000.00		.00136500.00
* 137500.000	5000.00	2672.08	2668.00	4.08	2086.26	2.40	733.08	3106.64	.00	5000.00		.00136500.00
* 137500.000	7500.00	2672.98	2668.00	4.98	2758.77	2.72	768.90	3472.67	.00	7500.00		.00136500.00
* 137500.000	10000.00	2673.75	2668.00	5.75	3369.14	2.97	800.02	3727.34	.00	10000.00		.00136500.00
* 137500.000	12500.00	2674.43	2668.00	6.43	3920.53	3.19	827.13	3988.88	.00	12500.00		.00136500.00
* 137500.000	15000.00	2675.02	2668.00	7.02	4415.80	3.40	852.94	4249.91	.00	15000.00		.00136500.00
* 137500.000	17500.00	2675.54	2668.00	7.54	4881.44	3.60	935.39	4382.36	8.20	17490.38		1.42136500.00
* 137500.000	20000.00	2676.02	2668.00	8.02	5347.41	3.79	1011.19	4456.19	44.54	19947.77		7.69136500.00
* 137500.000	25000.00	2676.88	2668.00	8.88	6274.31	4.13	1147.18	4755.53	227.30	24733.44		39.26136500.00
* 137500.000	30000.00	2677.63	2668.00	9.63	7186.65	4.42	1266.86	5029.98	561.08	29342.00		96.92136500.00

SECNO	Q	CWSEL	ELMIN	DEPTH	AREA	VCH	TOPWID	TWA	QLOB	QCH	QROB CUMDS
* 141900.000	500.00	2672.18	2670.00	2.18	599.15	.83	449.14	1811.84	.00	500.00	.00140900.00
* 141900.000	1000.00	2672.88	2670.00	2.88	954.36	1.05	561.60	2073.82	.00	1000.00	.00140900.00
* 141900.000	2000.00	2673.62	2670.00	3.62	1410.10	1.42	679.14	2498.80	.00	2000.00	.00140900.00
* 141900.000	3000.00	2674.28	2670.00	4.28	1890.62	1.59	784.22	2846.38	.00	3000.00	.00140900.00
* 141900.000	4000.00	2674.81	2670.00	4.81	2330.67	1.72	869.38	3050.60	.00	4000.00	.00140900.00
* 141900.000	5000.00	2675.26	2670.00	5.26	2741.05	1.82	933.52	3199.98	.19	4999.81	.00140900.00
* 141900.000	7500.00	2676.19	2670.00	6.19	3659.67	2.06	1051.53	3575.85	10.74	7489.26	.00140900.00
* 141900.000	10000.00	2676.97	2670.00	6.97	4520.93	2.23	1151.23	3837.53	41.05	9958.95	.00140900.00
* 141900.000	12500.00	2677.66	2670.00	7.66	5338.92	2.37	1238.52	4105.36	90.38	12409.62	.00140900.00
* 141900.000	15000.00	2678.27	2670.00	8.27	6121.16	2.48	1316.58	4372.10	156.44	14843.56	.00140900.00
* 141900.000	17500.00	2678.82	2670.00	8.82	6869.72	2.59	1387.18	4510.39	236.81	17263.19	.00140900.00
* 141900.000	20000.00	2679.33	2670.00	9.33	7598.03	2.68	1452.58	4589.56	330.33	19669.67	.00140900.00
* 141900.000	25000.00	2680.25	2670.00	10.25	9151.23	2.84	2253.02	4923.97	541.94	24406.20	51.86140900.00
* 141900.000	30000.00	2680.97	2670.00	10.97	10802.44	2.99	2298.37	5235.05	748.58	28751.02	500.41140900.00
* 144400.000	500.00	2676.63	2675.00	1.63	256.12	1.95	214.14	1827.63	.00	500.00	.00143400.00
* 144400.000	1000.00	2677.29	2675.00	2.29	413.57	2.42	260.58	2093.61	.00	1000.00	.00143400.00
* 144400.000	2000.00	2678.19	2675.00	3.19	673.65	2.97	322.97	2523.56	.00	2000.00	.00143400.00
* 144400.000	3000.00	2678.82	2675.00	3.82	892.76	3.36	367.41	2875.09	.00	3000.00	.00143400.00
* 144400.000	4000.00	2679.34	2675.00	4.34	1091.02	3.67	403.41	3082.54	.00	4000.00	.00143400.00
* 144400.000	5000.00	2679.78	2675.00	4.77	1274.73	3.92	434.12	3234.62	.00	5000.00	.00143400.00
* 144400.000	7500.00	2680.68	2675.00	5.68	1694.60	4.43	497.24	3615.82	.00	7500.00	.00143400.00
* 144400.000	10000.00	2681.41	2675.00	6.41	2077.17	4.81	548.46	3881.83	.00	10000.00	.00143400.00
* 144400.000	12500.00	2682.04	2675.00	7.04	2434.91	5.13	592.36	4153.37	.00	12500.00	.00143400.00
* 144400.000	15000.00	2682.59	2675.00	7.59	2775.03	5.41	631.27	4423.38	.00	15000.00	.00143400.00
* 144400.000	17500.00	2683.09	2675.00	8.09	3100.71	5.64	666.41	4564.61	.00	17500.00	.00143400.00
* 144400.000	20000.00	2683.55	2675.00	8.55	3415.67	5.86	698.71	4646.47	.00	20000.00	.00143400.00
* 144400.000	25000.00	2684.38	2675.00	9.38	4019.03	6.22	756.75	4990.53	.00	25000.00	.00143400.00
* 144400.000	30000.00	2685.14	2675.00	10.14	4616.70	6.50	825.84	5305.21	.00	30000.00	.00143400.00
152100.000	500.00	2691.75	2690.00	1.75	267.33	1.87	205.13	1864.68	.00	500.00	.00151100.00
152100.000	1000.00	2692.53	2690.00	2.53	443.99	2.25	251.55	2138.88	.00	1000.00	.00151100.00
* 152100.000	2000.00	2693.37	2690.00	3.37	677.30	2.95	302.12	2579.63	.00	2000.00	.00151100.00
* 152100.000	3000.00	2694.20	2690.00	4.20	950.47	3.16	352.22	2939.07	.00	3000.00	.00151100.00
* 152100.000	4000.00	2694.77	2690.00	4.77	1161.39	3.44	386.48	3153.08	.00	4000.00	.00151100.00
* 152100.000	5000.00	2695.66	2690.00	5.66	1581.92	3.16	599.29	3333.84	.00	5000.00	.00151100.00
* 152100.000	7500.00	2696.75	2690.00	6.75	2405.08	3.12	923.61	3770.24	.00	7500.00	.00151100.00
* 152100.000	10000.00	2697.43	2690.00	7.43	3109.03	3.22	1129.35	4067.84	.00	10000.00	.00151100.00
* 152100.000	12500.00	2697.97	2690.00	7.97	3765.51	3.32	1292.02	4362.32	.00	12500.00	.00151100.00
* 152100.000	15000.00	2698.43	2690.00	8.43	4391.17	3.42	1429.93	4650.71	.00	15000.00	.00151100.00
* 152100.000	17500.00	2698.84	2690.00	8.84	4992.30	3.51	1550.93	4807.57	.00	17500.00	.00151100.00
* 152100.000	20000.00	2699.20	2690.00	9.20	5573.89	3.59	1659.62	4903.20	.00	20000.00	.00151100.00
* 152100.000	25000.00	2699.83	2690.00	9.83	6685.09	3.74	1849.61	5266.09	.00	25000.00	.00151100.00
* 152100.000	30000.00	2700.29	2690.00	10.29	7556.56	3.97	1960.55	5591.44	1.13	29996.62	2.25151100.00

SECNO	Q	CWSEL	ELMIN	DEPTH	AREA	VCH	TOPWID	TWA	QLOB	QCH	QROB	CUMDS
156600.000	500.00	2701.37	2700.00	1.37	284.16	1.76	317.70	1891.69	.00	500.00	.00	155600.00
156600.000	1000.00	2701.89	2700.00	1.89	476.40	2.10	403.05	2172.69	.00	1000.00	.00	155600.00
* 156600.000	2000.00	2702.70	2700.00	2.70	857.73	2.33	533.36	2625.54	.00	2000.00	.00	155600.00
* 156600.000	3000.00	2703.24	2700.00	3.24	1166.97	2.57	619.22	2992.01	.00	3000.00	.00	155600.00
* 156600.000	4000.00	2703.68	2700.00	3.68	1452.19	2.75	688.98	3211.80	.00	4000.00	.00	155600.00
* 156600.000	5000.00	2704.06	2700.00	4.06	1728.21	2.89	750.35	3401.06	.00	5000.00	.00	155600.00
156600.000	7500.00	2704.98	2700.00	4.98	2483.11	3.02	896.99	3864.28	.00	7500.00	.00	155600.00
156600.000	10000.00	2705.52	2700.00	5.52	2991.03	3.36	986.75	4177.14	1.99	9987.58	10.43	155600.00
* 156600.000	12500.00	2705.77	2700.00	5.77	3245.69	3.90	1028.87	4469.15	6.30	12460.64	33.07	155600.00
* 156600.000	15000.00	2706.14	2700.00	6.14	3631.26	4.23	1089.53	4765.32	17.89	14888.17	93.94	155600.00
* 156600.000	17500.00	2706.49	2700.00	6.49	4023.47	4.50	1147.97	4931.03	36.82	17269.79	193.39	155600.00
* 156600.000	20000.00	2706.81	2700.00	6.81	4400.02	4.75	1201.39	5034.94	62.35	19610.19	327.47	155600.00
* 156600.000	25000.00	2707.38	2700.00	7.38	5120.22	5.20	1297.46	5413.04	131.96	24174.95	693.09	155600.00
* 156600.000	30000.00	2707.89	2700.00	7.89	5797.87	5.61	1381.77	5750.57	223.17	28604.66	1172.17	155600.00
* 159600.000	500.00	2711.39	2710.00	1.39	217.24	2.30	211.56	1908.75	.00	500.00	.00	158600.00
* 159600.000	1000.00	2712.03	2710.00	2.03	367.07	2.72	262.17	2193.85	.00	1000.00	.00	158600.00
* 159600.000	2000.00	2712.83	2710.00	2.83	602.03	3.32	326.07	2652.49	.00	2000.00	.00	158600.00
* 159600.000	3000.00	2713.40	2710.00	3.40	805.45	3.72	372.66	3023.13	.00	3000.00	.00	158600.00
* 159600.000	4000.00	2713.87	2710.00	3.87	989.22	4.04	410.21	3246.33	.00	4000.00	.00	158600.00
* 159600.000	5000.00	2714.28	2710.00	4.28	1160.42	4.31	442.34	3438.56	.00	5000.00	.00	158600.00
* 159600.000	7500.00	2715.10	2710.00	5.10	1551.81	4.83	508.22	3908.04	.00	7500.00	.00	158600.00
* 159600.000	10000.00	2715.77	2710.00	5.77	1909.82	5.24	561.76	4225.48	.00	10000.00	.00	158600.00
* 159600.000	12500.00	2716.35	2710.00	6.35	2244.99	5.57	607.62	4521.08	.00	12500.00	.00	158600.00
* 159600.000	15000.00	2716.85	2710.00	6.85	2564.34	5.85	648.30	4820.48	.00	15000.00	.00	158600.00
* 159600.000	17500.00	2717.31	2710.00	7.31	2869.65	6.10	684.94	4989.06	.00	17500.00	.00	158600.00
* 159600.000	20000.00	2717.74	2710.00	7.74	3165.91	6.32	718.71	5095.55	.00	20000.00	.00	158600.00
* 159600.000	25000.00	2718.49	2710.00	8.49	3732.77	6.70	779.26	5478.16	.00	25000.00	.00	158600.00
* 159600.000	30000.00	2719.17	2710.00	9.17	4276.83	7.01	833.24	5819.52	.00	30000.00	.00	158600.00
* 163100.000	500.00	2721.13	2719.00	2.13	214.75	2.33	190.68	1928.16	.00	500.00	.00	162100.00
* 163100.000	1000.00	2721.84	2719.00	2.84	369.33	2.71	247.17	2217.21	.00	1000.00	.00	162100.00
* 163100.000	2000.00	2722.80	2719.00	3.80	643.06	3.11	323.87	2682.05	.00	2000.00	.00	162100.00
* 163100.000	3000.00	2723.44	2719.00	4.44	867.41	3.46	375.21	3057.12	.00	3000.00	.00	162100.00
* 163100.000	4000.00	2723.97	2719.00	4.97	1076.10	3.72	417.34	3283.58	.00	4000.00	.00	162100.00
* 163100.000	5000.00	2724.42	2719.00	5.42	1271.87	3.93	453.32	3478.62	.00	5000.00	.00	162100.00
* 163100.000	7500.00	2725.29	2719.00	6.29	1698.63	4.43	534.48	3954.03	.79	7497.63	1.58	162100.00
* 163100.000	10000.00	2725.91	2719.00	6.91	2057.01	4.96	609.66	4277.28	17.28	9948.14	34.57	162100.00
* 163100.000	12500.00	2726.46	2719.00	7.46	2406.22	5.41	674.90	4578.09	60.15	12319.54	120.31	162100.00
* 163100.000	15000.00	2726.94	2719.00	7.94	2746.67	5.80	732.94	4882.32	129.47	14611.55	258.98	162100.00
* 163100.000	17500.00	2727.38	2719.00	8.38	3077.47	6.15	785.23	5055.40	222.91	16831.20	445.89	162100.00
* 163100.000	20000.00	2727.77	2719.00	8.77	3398.64	6.46	832.87	5166.11	337.81	18986.46	675.73	162100.00
* 163100.000	25000.00	2728.48	2719.00	9.48	4015.26	7.03	917.42	5556.54	623.09	23130.53	1246.38	162100.00
* 163100.000	30000.00	2729.09	2719.00	10.09	4601.68	7.53	991.16	5905.04	970.33	27088.72	1940.95	162100.00

SECNO	Q	CWSEL	ELMIN	DEPTH	AREA	VCH	TOPWID	TWA	QLOB	QCH	QROB	CUMDS
* 165500.000	500.00	2727.88	2726.00	1.88	268.22	1.86	283.67	1941.68	.00	500.00	.00	164500.00
* 165500.000	1000.00	2728.44	2726.00	2.44	451.25	2.22	367.93	2234.69	.00	1000.00	.00	164500.00
* 165500.000	2000.00	2729.19	2726.00	3.19	763.41	2.62	478.57	2704.78	.00	2000.00	.00	164500.00
* 165500.000	3000.00	2729.72	2726.00	3.72	1037.59	2.89	557.92	3083.67	.00	3000.00	.00	164500.00
* 165500.000	4000.00	2730.16	2726.00	4.16	1296.77	3.08	625.27	3313.36	.00	4000.00	.00	164500.00
* 165500.000	5000.00	2730.54	2726.00	4.54	1544.34	3.24	685.70	3511.19	.00	5000.00	.00	164500.00
* 165500.000	7500.00	2731.31	2726.00	5.31	2122.94	3.53	809.53	3992.30	.00	7500.00	.00	164500.00
* 165500.000	10000.00	2731.94	2726.00	5.94	2667.26	3.75	910.78	4320.07	.00	10000.00	.00	164500.00
* 165500.000	12500.00	2732.49	2726.00	6.49	3191.22	3.92	998.59	4624.70	.00	12500.00	.00	164500.00
* 165500.000	15000.00	2732.98	2726.00	6.98	3701.31	4.05	1077.23	4932.26	.00	15000.00	.00	164500.00
* 165500.000	17500.00	2733.43	2726.00	7.43	4199.95	4.17	1148.91	5108.31	.00	17500.00	.00	164500.00
* 165500.000	20000.00	2733.85	2726.00	7.85	4691.17	4.26	1215.39	5221.73	.00	20000.00	.00	164500.00
* 165500.000	25000.00	2734.57	2726.00	8.57	5615.81	4.45	1331.56	5616.65	.00	25000.00	.00	164500.00
* 165500.000	30000.00	2735.15	2726.00	9.15	6403.77	4.69	1424.53	5969.12	.38	29999.54	.08	164500.00
* 168200.000	500.00	2731.63	2730.00	1.63	322.31	1.55	295.56	1959.40	.00	500.00	.00	167200.00
* 168200.000	1000.00	2732.34	2730.00	2.34	560.90	1.78	380.28	2257.04	.00	1000.00	.00	167200.00
* 168200.000	2000.00	2733.20	2730.00	3.20	935.08	2.14	484.17	2733.52	.00	2000.00	.00	167200.00
* 168200.000	3000.00	2733.82	2730.00	3.82	1259.90	2.38	558.91	3117.17	.00	3000.00	.00	167200.00
* 168200.000	4000.00	2734.33	2730.00	4.33	1555.86	2.57	619.20	3350.76	.00	4000.00	.00	167200.00
* 168200.000	5000.00	2734.75	2730.00	4.75	1831.53	2.73	670.50	3551.95	.00	5000.00	.00	167200.00
* 168200.000	7500.00	2735.51	2730.00	5.51	2373.71	3.18	756.45	4039.10	4.01	7492.65	3.34	167200.00
* 168200.000	10000.00	2736.11	2730.00	6.11	2844.25	3.58	822.03	4371.96	31.66	9941.96	26.38	167200.00
* 168200.000	12500.00	2736.63	2730.00	6.63	3290.46	3.92	879.72	4681.57	89.67	12335.61	74.72	167200.00
* 168200.000	15000.00	2737.10	2730.00	7.10	3710.14	4.23	930.72	4994.10	176.32	14676.76	146.93	167200.00
168200.000	17500.00	2737.86	2730.00	7.86	4452.98	4.21	1014.72	5175.36	364.44	16831.86	303.69	167200.00
168200.000	20000.00	2738.26	2730.00	8.26	4870.15	4.44	1058.98	5292.21	522.84	19041.49	435.68	167200.00
* 168200.000	25000.00	2738.54	2730.00	8.54	5164.36	5.28	1089.11	5692.34	747.77	23629.12	623.11	167200.00
* 168200.000	30000.00	2739.11	2730.00	9.11	5806.19	5.72	1152.11	6050.59	1142.16	27906.08	951.76	167200.00
* 170800.000	500.00	2736.72	2735.00	1.72	259.80	1.92	202.92	1973.48	.00	500.00	.00	169800.00
* 170800.000	1000.00	2737.40	2735.00	2.40	412.90	2.42	244.02	2274.21	.00	1000.00	.00	169800.00
* 170800.000	2000.00	2738.35	2735.00	3.35	670.53	2.98	300.77	2755.16	.00	2000.00	.00	169800.00
* 170800.000	3000.00	2739.03	2735.00	4.03	890.90	3.37	341.92	3142.09	.00	3000.00	.00	169800.00
* 170800.000	4000.00	2739.59	2735.00	4.59	1090.07	3.67	375.24	3378.34	.00	4000.00	.00	169800.00
* 170800.000	5000.00	2740.06	2735.00	5.06	1274.45	3.92	404.25	3581.82	.00	5000.00	.00	169800.00
* 170800.000	7500.00	2741.06	2735.00	6.06	1712.19	4.38	474.03	4073.68	.00	7500.00	.00	169800.00
* 170800.000	10000.00	2741.86	2735.00	6.86	2116.43	4.72	530.38	4410.27	.00	10000.00	.00	169800.00
* 170800.000	12500.00	2742.55	2735.00	7.55	2498.61	5.00	578.62	4722.92	.00	12500.00	.00	169800.00
* 170800.000	15000.00	2743.16	2735.00	8.16	2864.49	5.24	621.31	5038.04	.00	15000.00	.00	169800.00
* 170800.000	17500.00	2743.73	2735.00	8.73	3231.04	5.42	661.32	5221.85	.00	17500.00	.00	169800.00
* 170800.000	20000.00	2744.24	2735.00	9.24	3575.55	5.59	696.83	5340.71	.00	20000.00	.00	169800.00
* 170800.000	25000.00	2745.11	2735.00	10.11	4211.15	5.94	758.00	5744.01	.00	25000.00	.00	169800.00
* 170800.000	30000.00	2745.91	2735.00	10.91	4837.79	6.20	813.81	6105.23	.00	30000.00	.00	169800.00

SECNO	Q	CWSEL	ELMIN	DEPTH	AREA	VCH	TOPWID	TWA	QLOB	QCH	QROB	CUMDS
* 172900.000	500.00	2742.94	2741.00	1.94	236.22	2.12	243.01	1985.85	.00	500.00		.00171900.00
* 172900.000	1000.00	2743.67	2741.00	2.67	446.59	2.24	334.14	2288.85	.00	1000.00		.00171900.00
172900.000	2000.00	2744.22	2741.00	3.22	648.41	3.08	402.62	2772.12	.00	2000.00		.00171900.00
172900.000	3000.00	2744.81	2741.00	3.81	907.75	3.30	476.38	3161.81	.00	3000.00		.00171900.00
* 172900.000	4000.00	2745.40	2741.00	4.40	1203.69	3.32	519.97	3400.65	.00	4000.00		.00171900.00
* 172900.000	5000.00	2745.76	2741.00	4.76	1393.26	3.59	537.89	3605.05	.00	5000.00		.00171900.00
* 172900.000	7500.00	2746.54	2741.00	5.54	1826.92	4.11	576.79	4099.17	.00	7500.00		.00171900.00
* 172900.000	10000.00	2747.22	2741.00	6.22	2231.85	4.48	610.89	4437.57	.00	10000.00		.00171900.00
* 172900.000	12500.00	2747.82	2741.00	6.82	2610.10	4.79	641.10	4751.86	.00	12500.00		.00171900.00
* 172900.000	15000.00	2748.37	2741.00	7.37	2968.51	5.05	668.47	5068.45	.00	15000.00		.00171900.00
* 172900.000	17500.00	2748.87	2741.00	7.87	3311.03	5.29	693.62	5253.66	.00	17500.00		.00171900.00
* 172900.000	20000.00	2749.34	2741.00	8.34	3640.43	5.49	716.97	5373.79	.00	20000.00		.00171900.00
* 172900.000	25000.00	2750.13	2741.00	9.13	4225.60	5.92	759.33	5779.68	.05	24999.83		.12171900.00
172900.000	30000.00	2751.00	2741.00	10.00	4908.60	6.15	819.88	6144.61	9.84	29965.56		24.61171900.00

APPENDIX F

HEC1 S/N: 1090525070   HMVersion: 5.20   Data File: ACK-ALT.HC1

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*****************************************                    *****************************************
*                                       *                    *                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                    *   U.S. ARMY CORPS OF ENGINEERS        *
*             FEBRUARY 1981             *                    * THE HYDROLOGIC ENGINEERING CENTER     *
*           REVISED 02 AUG 88           *                    *          609 SECOND STREET            *
*                                       *                    *       DAVIS, CALIFORNIA 95616         *
* RUN DATE  09/13/1990  TIME  11:07:57  *                    *                                       *
*                                       *                    *                                       *
*****************************************                    *****************************************
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X     X  XXXXXXX   XXXXX        X
X     X  X        X     X      XX
X     X  X        X             X
XXXXXXX  XXXX     X      XXXXX  X
X     X  X        X             X
X     X  X        X     X       X
X     X  XXXXXXX   XXXXX       XXX
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:::::::::::::::::::::::::::::::::::::::::::
:::::::::::::::::::::::::::::::::::::::::::
:::                                     :::
:::  Full Microcomputer Implementation  :::
:::                 by                  :::
:::         Haestad Methods, Inc.       :::
:::                                     :::
:::::::::::::::::::::::::::::::::::::::::::
:::::::::::::::::::::::::::::::::::::::::::
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37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

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ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

*DIAGRAM
ID    MARTIN COUNTY FLOOD CONTROL STUDY     JOB NO. 06901-001-036
ID    HDR ENGINEERING, INC.                 AUSTIN, TEXAS
ID
ID    ACKERLY AREA MODEL TO HWY 846 PLAYAS
ID
ID    COMPUTING 2-YR, 5-YR, 10-YR, 25-YR, 50-YR, AND 100-YR FLOOD EVENTS
ID    FOR ACKERLY/KNOTT AREA USING PLAN OPTION IN HEC-1.
ID    PROPOSED PLAN
ID                PLAN 1:   2-YEAR EVENT
ID                PLAN 2:   5-YEAR EVENT
ID                PLAN 3:  10-YEAR EVENT
ID                PLAN 4:  25-YEAR EVENT
ID                PLAN 5:  50-YEAR EVENT
ID                PLAN 6: 100-YEAR EVENT
ID
ID
IT      10                     300
IO       5       0
JP       6

KK  TRIPLY
KM    RUNOFF HYDROGRAPH FOR TRI-PLAYA SUBBASIN
KP       1
PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
BA    3.74
LS       0      72
UD    0.91
KP       2
PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
KP       3
PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
KP       4
PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
KP       5
PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
KP       6
PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

KK  PLAYA1
KM    ROUTE INFLOW HYDROGRAPH THROUGH PLAYA NO. 1
RS       1    ELEV  2782.5
SV       0      25   294.3  2207.6  4120.9
SQ       0       0       0       0   50000
SE  2782.5    2785    2790    2800    2810

KK    RT01
KM    ROUTE PLAYA NO. 1 OUTFLOW TO ACKERLY FAR WEST CONFLUENCE
RK    3900   .0026   0.030            TRAP       0       4
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


 46           KK  ACK-A
 47           KM   RUNOFF HYDROGRAPH FOR ACKERLY-A SUBBASIN
 48           PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 49           BA    0.25
 50           LS       0      72
 51           UD    0.19
 52           KP       2
 53           PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 54           KP       3
 55           PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 56           KP       4
 57           PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 58           KP       5
 59           PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 60           KP       6
 61           PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 62           KK  2002-A
 63           KM   COMBINE ACK-A WITH RT01
 64           HC       2

 65           KK    RT02
 66           KM   ROUTE 2002-A TO DAVENP
 67           RK    4500   .0055   0.030           TRAP      10       6

 68           KK     A-1
 69           KM   RUNOFF HYDROGRAPH FOR A-1 SUBBASIN
 70           PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 71           BA    0.74
 72           LS       0      72
 73           UD    0.30
 74           KP       2
 75           PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 76           KP       3
 77           PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 78           KP       4
 79           PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 80           KP       5
 81           PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 82           KP       6
 83           PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 84           KK  DAVENP
 85           KM   COMBINE RT02 WITH A-1
 86           HC       2

 87           KK    RT03
 88           KM   ROUTE DAVENPORT PLAYA OUTFLOW HYDROGRAPH TO B-1 OUT
 89           RK    5200   .0050   0.030           TRAP       0       4
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 90           KK     B-1
 91           KM    COMPUTE RUNOFF HYDROGRAPH FOR B-1 SUBBASIN
 92           PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 93           BA    0.43
 94           LS       0      72
 95           UD    0.28
 96           KP       2
 97           PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 98           KP       3
 99           PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
100           KP       4
101           PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
102           KP       5
103           PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
104           KP       6
105           PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

106           KK  B-1OUT
107           KM    COMBINE RT03 WITH B-1
108           HC       2

109           KK    RT08
110           KM    ROUTE B-1OUT TO C-1BOUT
111           RK    5200   .0048   0.030            TRAP       0     4.0

112           KK   ACK-B
113           KM    RUNOFF HYDROGRAPH FOR ACKERLY WEST SUBBASIN
114           PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
115           BA    1.33
116           LS       0      72
117           UD    0.36
118           KP       2
119           PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
120           KP       3
121           PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
122           KP       4
123           PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
124           KP       5
125           PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
126           KP       6
127           PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

128           KK    RT05
129           KM    ROUTE 2002-B TO SNELL
130           RK    5400   .0043   0.030            TRAP       0     3.6

131           KK     A-2
132           KM    RUNOFF HYDROGRAPH FOR A-2
133           PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
134           BA    1.00
135           LS       0      72
136           UD    0.26
137           KP       2
138           PH      20    32.4    0.51     1.0     1.9     2.2     2,3     2.8     3.3     3.9
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 139          KP       3
 140          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 141          KP       4
 142          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 143          KP       5
 144          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 145          KP       6
 146          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 147          KK   SNELL
 148          KM    COMBINE RT05 WITH A-2
 149          HC       2

 150          KK  SNELPL
 151          KM    ROUTE SNELL INFLOW HYDROGRAPH THROUGH SNELL PLAYA
 152          RS       1    ELEV
 153          SV       0      68     136
 154          SE    2755    2760    2765
 155          SL    2755     3.1     0.6     0.5
 156          SS    2760     500     2.6     1.5

 157          KK    RT06
 158          KM    ROUTE A-2OUT TO ACKWST
 159          RK    5500   .0045   0.030            TRAP       0     4.0

 160          KK     B-2
 161          KM    RUNOFF HYDROGRAPH FOR B-2
 162          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 163          BA    1.00
 164          LS       0      72
 165          UD    0.26
 166          KP       2
 167          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 168          KP       3
 169          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 170          KP       4
 171          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 172          KP       5
 173          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 174          KP       6
 175          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 176          KK  ACKRLY
 177          KM    RUNOFF HYDROGRAPH FOR ACKERLY SUBBASIN
 178          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 179          BA    0.68
 180          LS       0      72
 181          UD    0.35
 182          KP       2
 183          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 184          KP       3
 185          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 186          KP       4
 187          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 188          KP       5
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 189          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 190          KP       6
 191          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 192          KK    RT04
 193          KM    ROUTE ACKRLY SUBBASIN TO 2002-B
 194          RK    4600   .0022   0.030           TRAP       0       4

 195          KK     A-3
 196          KM    RUNOFF HYDROGRAPH FOR A-3
 197          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 198          BA    0.92
 199          LS       0      72
 200          UD    0.50
 201          KP       2
 202          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 203          KP       3
 204          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 205          KP       4
 206          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 207          KP       5
 208          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 209          KP       6
 210          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 211          KK  JEFFCT
 212          KM    COMBINE ROUTED ACKERLY HYDROGRAPH WITH A-3 RUNOFF HYDROGRAPH
 213          HC       2

 214          KK  JEFFPL
 215          KM    ROUTE JEFFCT INFLOW HYDROGRAPH THROUGH JEFFCOAT PLAYA
 216          RS       1    ELEV    2770
 217          SV       0     353     706
 218          SE    2770    2780    2790
 219          SL    2770     3.1     0.6     0.5
 220          SS    2780     500     2.6     1.5

 221          KK  ACKWST
 222          KM    COMBINE RT06 WITH B-2 AND A-3
 223          HC       3

 224          KK  ACKTOT
 225          KM    COMBINE ACKWST RUNOFF HYDROGRAPH WITH RT08 (DAVENPORT) HYDROGRAPH
 226          HC       2

 227          KK  MAHONY
 228          RS       1    ELEV    2731
 229          SV       0      16     189     755
 230          SE    2731    2735    2740    2745
 231          SL    2731     3.1     0.6     0.5
 232          SS    2740     400     2.6     1.5
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LINE	ID	1	2	3	4	5	6	7	8	9	10
233	KK	RT07									
234	KM	ROUTE ACKWST TO C1BOUT									
235	RK	5900	.0037	0.030		TRAP	0	4.0			
236	KK	C-1B									
237	KM	RUNOFF HYDROGRAPH FOR C-1B									
238	PH	50	32.4	0.42	0.8	1.4	1.6	1.7	2.1	2.4	2.8
239	BA	0.15									
240	LS	0	72								
241	UD	1.10									
242	KP	2									
243	PH	20	32.4	0.51	1.0	1.9	2.2	2.3	2.8	3.3	3.9
244	KP	3									
245	PH	10	32.4	0.58	1.2	2.2	2.6	2.8	3.4	3.9	4.6
246	KP	4									
247	PH	4	32.4	0.67	1.4	2.6	3.1	3.3	3.8	4.7	5.3
248	KP	5									
249	PH	2	32.4	0.75	1.5	3.0	3.4	3.7	4.4	5.3	6.1
250	KP	6									
251	PH	1	32.4	0.82	1.7	3.3	3.8	4.2	5.1	5.9	6.9
252	KK	C-2									
253	KM	RUNOFF HYDROGRAPH FOR C-2									
254	PH	50	32.4	0.42	0.8	1.4	1.6	1.7	2.1	2.4	2.8
255	BA	1.00									
256	LS	0	72								
257	UD	0.50									
258	KP	2									
259	PH	20	32.4	0.51	1.0	1.9	2.2	2.3	2.8	3.3	3.9
260	KP	3									
261	PH	10	32.4	0.58	1.2	2.2	2.6	2.8	3.4	3.9	4.6
262	KP	4									
263	PH	4	32.4	0.67	1.4	2.6	3.1	3.3	3.8	4.7	5.3
264	KP	5									
265	PH	2	32.4	0.75	1.5	3.0	3.4	3.7	4.4	5.3	6.1
266	KP	6									
267	PH	1	32.4	0.82	1.7	3.3	3.8	4.2	5.1	5.9	6.9
268	KK	B-3									
269	KM	RUNOFF HYDROGRAPH FOR B-3									
270	PH	50	32.4	0.42	0.8	1.4	1.6	1.7	2.1	2.4	2.8
271	BA	1.00									
272	LS	0	72								
273	UD	0.47									
274	KP	2									
275	PH	20	32.4	0.51	1.0	1.9	2.2	2.3	2.8	3.3	3.9
276	KP	3									
277	PH	10	32.4	0.58	1.2	2.2	2.6	2.8	3.4	3.9	4.6
278	KP	4									
279	PH	4	32.4	0.67	1.4	2.6	3.1	3.3	3.8	4.7	5.3
280	KP	5									
281	PH	2	32.4	0.75	1.5	3.0	3.4	3.7	4.4	5.3	6.1
282	KP	6									
283	PH	1	32.4	0.82	1.7	3.3	3.8	4.2	5.1	5.9	6.9

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

              KK    RT09
              KM    ROUTE B-3 TO C1BOUT
              RK   10400   .0038   0.030             TRAP       0     4.0

              KK     C-3
              KM    RUNOFF HYDROGRAPH FOR C-3
              PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
              BA    1.00
              LS       0      72
              UD    0.38
              KP       2
              PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
              KP       3
              PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
              KP       4
              PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
              KP       5
              PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
              KP       6
              PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

              KK    RT10
              KM    ROUTE C-3 TO C1BOUT
              RK    5200   .0019   0.030             TRAP       0     4.0

              KK    ZANT
              KM    COMBINE C-1B - C-2 - RT10 - RT09 TO GIVE ZANT SUBBASIN RUNOFF HYDROGRAPH
              HC       4

              KK   ZNTIN
              KM    COMBINE ACKTOT (DAVENPORT & ACKERLY WEST) WITH ZANT
              HC       2

              KK  ZNTOUT
              RS       1    ELEV    2710
              SV       0     118     690
              SE    2710    2715    2720
              SL    2710     3.1     0.6     0.5
              SS    2715     500     2.6     1.5

              KK    RT11
              KM    ROUTE ZNTOUT TO COXOUT
              RK    5200   .0040   0.030             TRAP       0     4.0

              KK     COX
              KM    RUNOFF HYDROGRAPH FOR COX SUBBASIN
              PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
              BA    1.00
              LS       0      72
              UD    0.49
              KP       2
              PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
              KP       3
              PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
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LINE	ID	1	2	3	4	5	6	7	8	9	10
331	KP	4									
332	PH	4	32.4	0.67	1.4	2.6	3.1	3.3	3.8	4.7	5.3
333	KP	5									
334	PH	2	32.4	0.75	1.5	3.0	3.4	3.7	4.4	5.3	6.1
335	KP	6									
336	PH	1	32.4	0.82	1.7	3.3	3.8	4.2	5.1	5.9	6.9
337	KK	COXIN									
338	KM	COMBINE RT11 WITH COX									
339	HC	2									
340	KK	COXOUT									
341	RS	1	ELEV	2682							
342	SV	0	27	396							
343	SE	2682	2685	2690							
344	SL	2682	3.1	0.6	0.5						
345	SS	2687	500	2.6	1.5						
346	KK	RT12									
347	KM	ROUTE COXOUT TO PHLOUT									
348	RK	5200	.0044	0.030		TRAP	0	4.0			
349	KK	PHILIP									
350	KM	RUNOFF HYDROGRAPH FOR PHILLIPS SUBBASIN									
351	PH	50	32.4	0.42	0.8	1.4	1.6	1.7	2.1	2.4	2.8
352	BA	1.00									
353	LS	0	72								
354	UD	0.32									
355	KP	2									
356	PH	20	32.4	0.51	1.0	1.9	2.2	2.3	2.8	3.3	3.9
357	KP	3									
358	PH	10	32.4	0.58	1.2	2.2	2.6	2.8	3.4	3.9	4.6
359	KP	4									
360	PH	4	32.4	0.67	1.4	2.6	3.1	3.3	3.8	4.7	5.3
361	KP	5									
362	PH	2	32.4	0.75	1.5	3.0	3.4	3.7	4.4	5.3	6.1
363	KP	6									
364	PH	1	32.4	0.82	1.7	3.3	3.8	4.2	5.1	5.9	6.9
365	KK	PHILPL									
366	KM	ROUTE PHILIP THROUGH PHILLIPS PLAYA									
367	RS	1	ELEV	2660							
368	SV	0	193	386							
369	SE	2660	2665	2670							
370	SL	2660	3.1	0.6	0.5						
371	SS	2665	200	2.6	1.5						
372	KK	RT13									
373	KM	ROUTE PHILPL TO PHLOUT									
374	RK	2700	.0019	0.030		TRAP	0	4.0			

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 375          KK  SHORTE
 376          KM    RUNOFF HYDROGRAPH FOR SHORTES SUBBASIN
 377          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 378          BA    0.45
 379          LS       0      72
 380          UD    0.23
 381          KP       2
 382          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 383          KP       3
 384          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 385          KP       4
 386          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 387          KP       5
 388          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 389          KP       6
 390          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 391          KK  PHLOUT
 392          KM    COMBINE RT13 WITH RT12 AND SHORTE
 393          HC       3

 394          KK    RT14
 395          KM    ROUTE PHLOUT TO F-1OUT
 396          RK    5200   .0046   0.030            TRAP       0     4.0

 397          KK     B-4
 398          KM    RUNOFF HYDROGRAPH FOR B-4
 399          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 400          BA    1.17
 401          LS       0      72
 402          UD    1.25
 403          KP       2
 404          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 405          KP       3
 406          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 407          KP       4
 408          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 409          KP       5
 410          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 411          KP       6
 412          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 413          KK    RT15
 414          KM    ROUTE B-4 TO C-4OUT
 415          RK    5400   .0070   0.030            TRAP       0     4.0

 416          KK     C-4
 417          KM    RUNOFF HYDROGRAPH FOR C-4
 418          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 419          BA    0.97
 420          LS       0      72
 421          UD    0.29
 422          KP       2
 423          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 424          KP       3
 425          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 426          KP       4
 427          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 428          KP       5
 429          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 430          KP       6
 431          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 432          KK  C-4OUT
 433          KM    COMBINE RT15 WITH C-4
 434          HC       2

 435          KK    RT16
 436          KM    ROUTE C-4OUT TO DE3OUT
 437          RK   16400   .0042   0.030            TRAP       0     4.0

 438          KK   D/E-3
 439          KM    RUNOFF HYDROGRAPH FOR D/E-3
 440          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 441          BA    1.36
 442          LS       0      72
 443          UD    0.59
 444          KP       2
 445          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 446          KP       3
 447          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 448          KP       4
 449          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 450          KP       5
 451          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 452          KP       6
 453          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 454          KK   D/E-4
 455          KM    RUNOFF HYDROGRAPH FOR D/E-4
 456          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 457          BA    2.65
 458          LS       0      72
 459          UD    0.97
 460          KP       2
 461          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 462          KP       3
 463          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 464          KP       4
 465          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 466          KP       5
 467          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 468          KP       6
 469          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 470          KK  DE3OUT
 471          KM    COMBINE RT16 - D/E-3 - D/E-4
 472          HC       3

 473          KK    RT17
 474          KM    ROUTE DE3OUT TO ROSEWD
 475          RK   10400   .0027   0.030           TRAP       0     4.0

 476          KK     F-2
 477          KM    RUNOFF HYDROGRAPH FOR F-2
 478          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 479          BA    1.00
 480          LS       0      72
 481          UD    0.59
 482          KP       2
 483          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 484          KP       3
 485          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 486          KP       4
 487          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 488          KP       5
 489          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 490          KP       6
 491          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 492          KK  ROSEWD
 493          KM    COMBINE RT17 WITH F-2
 494          HC       2

 495          KK  ROSEPL
 496          KM    ROUTE ROSEWD THROUGH ROSEWOOD PLAYA
 497          RS       1    ELEV    2640
 498          SV       0     276    1060
 499          SE    2640    2645    2650
 500          SL    2640     3.1     0.6     1.5
 501          SS    2646     500     2.6     1.5

 502          KK    C-1A
 503          KM    RUNOFF HYDROGRAPH FOR C-1A
 504          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 505          BA    0.13
 506          LS       0      72
 507          UD    1.13
 508          KP       2
 509          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 510          KP       3
 511          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 512          KP       4
 513          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 514          KP       5
 515          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 516          KP       6
 517          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 518          KK    RT18
 519          KM    ROUTE C-1A TO D-1OUT
 520          RK    5400   .0050   0.030             TRAP       0      4.0

 521          KK     D-1
 522          KM    RUNOFF HYDROGRAPH FOR D-1
 523          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 524          BA    0.89
 525          LS       0      72
 526          UD    0.36
 527          KP       2
 528          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 529          KP       3
 530          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 531          KP       4
 532          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 533          KP       5
 534          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 535          KP       6
 536          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 537          KK  D-1OUT
 538          KM    COMBINE RT18 WITH D-1
 539          HC       2

 540          KK    RT19
 541          KM    ROUTE D-1OUT TO E1AOUT
 542          RK    6700   .0025   0.030             TRAP       0      4.0

 543          KK    E-1A
 544          KM    RUNOFF HYDROGRAPH FOR E-1A
 545          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 546          BA    0.55
 547          LS       0      72
 548          UD    0.97
 549          KP       2
 550          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 551          KP       3
 552          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 553          KP       4
 554          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 555          KP       5
 556          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 557          KP       6
 558          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 559          KK  E1AOUT
 560          KM    COMBINE RT19 WITH E-1A
 561          HC       2
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 562          KK    RT20
 563          KM    ROUTE E1AOUT TO F-1OUT
 564          RK    5200   .0038   0.030            TRAP       0     4.0

 565          KK     F-1
 566          KM    RUNOFF HYDROGRAPH FOR F-1
 567          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 568          BA    1.13
 569          LS       0      72
 570          UD    0.50
 571          KP       2
 572          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 573          KP       3
 574          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 575          KP       4
 576          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 577          KP       5
 578          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 579          KP       6
 580          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 581          KK    SHAW
 582          KM    COMBINE F-1 WITH RT20 TO GIVE RUNOFF HYDROGRAPH FOR SHAW SUBBASIN
 583          HC       2

 584          KK  SHWRSE
 585          KM    COMBINE SHAW - ROSEPL - AND PHLOUT HYDROGRAPHS AT INTERSECTION
 586          HC       3

 587          KK    RT21
 588          KM    ROUTE SHWRSE TO NICHIN
 589          RK    5200   .0050   0.030            TRAP       0     4.0

 590          KK   F-3/4
 591          KM    RUNOFF HYDROGRAPH FOR F-3/4
 592          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 593          BA    1.84
 594          LS       0      72
 595          UD    0.88
 596          KP       2
 597          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 598          KP       3
 599          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 600          KP       4
 601          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 602          KP       5
 603          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 604          KP       6
 605          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 654          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 655          KP       6
 656          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 657          KK    G-1B
 658          KM    RUNOFF HYDROGRAPH FOR G-1B
 659          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 660          BA    0.58
 661          LS       0      72
 662          UD    0.28
 663          KP       2
 664          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 665          KP       3
 666          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 667          KP       4
 668          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 669          KP       5
 670          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 671          KP       6
 672          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 673          KK     G-1
 674          KM    COMBINE G-1A WITH G-1B
 675          HC       2

 676          KK    RT23
 677          KM    ROUTE G-1 TO CRD846
 678          RK    5300   .0042   0.030            TRAP       8     2.8

 679          KK    H-1B
 680          KM    RUNOFF HYDROGRAPH FOR H-1B
 681          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 682          BA    1.01
 683          LS       0      72
 684          UD    0.22
 685          KP       2
 686          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 687          KP       3
 688          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 689          KP       4
 690          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 691          KP       5
 692          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 693          KP       6
 694          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 695          KK  CRD846
 696          KM     COMBINE H-1B - RT23 - RT22
 697          HC       3
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


 698          KK    RT24
 699          KM    ROUTE H-1 TO 846AIN
 700          RK    3200   .0063   0.030              TRAP        8       2.8

 701          KK    H-1A
 702          KM    RUNOFF HYDROGRAPH FOR H-1A
 703          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 704          BA    0.13
 705          LS       0      72
 706          UD    0.13
 707          KP       2
 708          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 709          KP       3
 710          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 711          KP       4
 712          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 713          KP       5
 714          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 715          KP       6
 716          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 717          KK    RT25
 718          KM    ROUTE H-1A TO 846AIN
 719          RK    2800   .0039   0.030              TRAP        0         4

 720          KK    I-1B
 721          KM    RUNOFF HYDROGRAPH FOR I-1B
 722          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 723          BA    0.37
 724          LS       0      72
 725          UD    0.27
 726          KP       2
 727          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 728          KP       3
 729          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 730          KP       4
 731          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 732          KP       5
 733          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 734          KP       6
 735          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 736          KK    I-1C
 737          KM    RUNOFF HYDROGRAPH FOR I-1C
 738          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 739          BA    0.60
 740          LS       0      72
 741          UD    0.18
 742          KP       2
 743          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 744          KP       3
 745          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 746          KP       4
 747          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 748          KP       5
 749          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 750          KP       6
 751          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 752          KK  846AIN
 753          KM    COMBINE RT24 - RT25 - I-1B - I-1C
 754          HC       4

 755          KK  846PLA
 756          KM    ROUTE 846AIN HYDROGRAPH THROUGH 846 PLAYA A
 757          RS       1    ELEV    2580
 758          SV       0     357    1189    2937
 759          SE    2575    2580    2585    2590
 760          SL    2580     3.1     0.6     1.5
 761          SS    2586     500     2.6     1.5

 762          KK    I-1B
 763          KM    RUNOFF HYDROGRAPH FOR I-1B
 764          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 765          BA    0.31
 766          LS       0      72
 767          UD    0.13
 768          KP       2
 769          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 770          KP       3
 771          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 772          KP       4
 773          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 774          KP       5
 775          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 776          KP       6
 777          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 778          KK  846BIN
 779          KM    COMBINE I-1A RUNOFF HYDROGRAPH WITH OUTFLOW FROM 846 PLAYA A
 780          HC       2

 781          KK  846PLB
 782          KM    ROUTE 846BIN HYDROGRAPH THROUGH 846 PLAYA B
 783          RS       1    ELEV    2585
 784          SV       0     216     663
 785          SE    2580    2585    2590
 786          SL    2585     3.1     0.6     1.5
 787          SS    2587     500     2.6     1.5

 788          KK     J-1
 789          KM    RUNOFF HYDROGRAPH FOR J-1
 790          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 791          BA    0.47
 792          LS       0      72
 793          UD    0.18
 794          KP       2
 795          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 796          KP       3
```

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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 797        PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 798        KP       4
 799        PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 800        KP       5
 801        PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 802        KP       6
 803        PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 804        KK  846CIN
 805        KM    COMBINE J-1 RUNOFF HYDROGRAPH WITH OUTFLOW HYDROGRAPH FROM 846 PLAYA B
 806        HC       2

 807        KK  846PLC
 808        RS       1    ELEV    2580
 809        SV       0     258     736
 810        SE    2575    2580    2585
 811        SS    2580     300     2.6     1.5
 812        ZZ
```

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                SCHEMATIC DIAGRAM OF STREAM NETWORK
INPUT
 LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

  NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

   20      TRIPLY
                V
                V
   37      PLAYA1
                V
                V
   43        RT01
                .
                .
   46           .       ACK-A
                .           .
                .           .
   62      2002-A............
                V
                V
   65        RT02
                .
                .
   68           .         A-1
                .           .
                .           .
   84      DAVENP............
                V
                V
   87        RT03
                .
                .
   90           .         B-1
                .           .
                .           .
  106      B-1OUT............
                V
                V
  109        RT08
                .
                .
  112           .       ACK-B
                .           V
                .           V
  128           .        RT05
                .           .
                .           .
  131           .           .         A-2
                .           .           .
                .           .           .
  147           .       SNELL............
                .           V
                .           V
  150           .      SNELPL
                .           V
                .           V
  157           .        RT06
                .           .
```

```
              .           .
160           .           .         B-2
              .           .           .
              .           .           .
176           .           .           .     ACKRLY
              .           .           .           V
              .           .           .           V
192           .           .           .       RT04
              .           .           .           .
              .           .           .           .
195           .           .           .           .         A-3
              .           .           .           .           .
              .           .           .           .           .
211           .           .           .     JEFFCT............
              .           .           .           V
              .           .           .           V
214           .           .           .     JEFFPL
              .           .           .           .
              .           .           .           .
221           .     ACKWST........................
              .           .
              .           .
224    ACKTOT............
              V
              V
227    MAHONY
              V
              V
233      RT07
              .
              .
236           .       C-1B
              .           .
              .           .
252           .           .         C-2
              .           .           .
              .           .           .
268           .           .           .         B-3
              .           .           .           V
              .           .           .           V
284           .           .           .       RT09
              .           .           .           .
              .           .           .           .
287           .           .           .           .         C-3
              .           .           .           .           V
              .           .           .           .           V
303           .           .           .           .       RT10
              .           .           .           .           .
              .           .           .           .           .
306           .       ZANT....................................
              .           .
              .           .
309     ZNTIN............
              V
              V
312    ZNTOUT
              V
              V
318      RT11
              .
```

```
              .
 321          .        COX
              .          .
              .          .
 337      COXIN...........
              V
              V
 340     COXOUT
              V
              V
 346       RT12
              .
              .
 349          .      PHILIP
              .           V
              .           V
 365          .      PHILPL
              .           V
              .           V
 372          .        RT13
              .           .
              .           .
 375          .           .       SHORTE
              .           .            .
              .           .            .
 391     PHLOUT.......................
             V
             V
 394       RT14
             .
             .
 397         .         B-4
             .           V
             .           V
 413         .        RT15
             .           .
             .           .
 416         .           .          C-4
             .           .            .
             .           .            .
 432         .     C-4OUT............
             .          V
             .          V
 435         .       RT16
             .          .
             .          .
 438         .          .       D/E-3
             .          .           .
             .          .           .
 454         .          .           .       D/E-4
             .          .           .           .
             .          .           .           .
 470         .     DE3OUT.......................
             .          V
             .          V
 473         .       RT17
             .          .
             .          .
 476         .          .         F-2
             .          .           .
```

```
              .           .           .
492           .      ROSEWD............
              .           V
              .           V
495           .      ROSEPL
              .           .
              .           .
502           .           .        C-1A
              .           .           V
              .           .           V
518           .           .        RT18
              .           .           .
              .           .           .
521           .           .           .         D-1
              .           .           .           .
              .           .           .           .
537           .           .      D-1OUT............
              .           .           V
              .           .           V
540           .           .        RT19
              .           .           .
              .           .           .
543           .           .           .        E-1A
              .           .           .           .
              .           .           .           .
559           .           .      E1AOUT............
              .           .           V
              .           .           V
562           .           .        RT20
              .           .           .
              .           .           .
565           .           .           .         F-1
              .           .           .           .
              .           .           .           .
581           .           .        SHAW............
              .           .           .
              .           .           .
584      SHWRSE........................
              V
              V
587        RT21
              .
              .
590           .       F-3/4
              .           V
              .           V
606           .      RTNICK
              .           .
              .           .
609           .           .         G-2
              .           .           .
              .           .           .
625           .      NICHOL............
              .           .
              .           .
628      NICHIN............
              V
              V
631      NICHPL
              V
```

```
               V
638          RT22
               .
               .
641            .          G-1A
               .             .
               .             .
657            .             .         G-1B
               .             .            .
               .             .            .
673            .           G-1............
               .             V
               .             V
676            .          RT23
               .             .
               .             .
679            .             .         H-1B
               .             .            .
               .             .            .
695         CRD846.......................
               V
               V
698          RT24
               .
               .
701            .          H-1A
               .             V
               .             V
717            .          RT25
               .             .
               .             .
720            .             .         I-1B
               .             .            .
               .             .            .
736            .             .            .         I-1C
               .             .            .            .
               .             .            .            .
752         846AIN.................................
               V
               V
755         846PLA
               .
               .
762            .          I-1B
               .             .
               .             .
778         846BIN............
               V
               V
781         846PLB
               .
               .
788            .           J-1
               .             .
               .             .
804         846CIN............
               V
               V
807         846PLC
```

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             FEBRUARY 1981             *
*           REVISED 02 AUG 88           *
*                                       *
* RUN DATE  09/13/1990  TIME  11:07:57  *
*                                       *
*****************************************
```

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*****************************************
*                                       *
*     U.S. ARMY CORPS OF ENGINEERS      *
*  THE HYDROLOGIC ENGINEERING CENTER    *
*          609 SECOND STREET            *
*      DAVIS, CALIFORNIA 95616          *
*                                       *
*                                       *
*****************************************
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MARTIN COUNTY FLOOD CONTROL STUDY      JOB NO. 06901-001-036
HDR ENGINEERING, INC.                  AUSTIN, TEXAS

ACKERLY AREA MODEL TO HWY 846 PLAYAS

COMPUTING 2-YR, 5-YR, 10-YR, 25-YR, 50-YR, AND 100-YR FLOOD EVENTS
FOR ACKERLY/KNOTT AREA USING PLAN OPTION IN HEC-1.

          PLAN 1:   2-YEAR EVENT
          PLAN 2:   5-YEAR EVENT
          PLAN 3:  10-YEAR EVENT
          PLAN 4:  25-YEAR EVENT
          PLAN 5:  50-YEAR EVENT
          PLAN 6: 100-YEAR EVENT
```

```
18 IO        OUTPUT CONTROL VARIABLES
                   IPRNT           5  PRINT CONTROL
                   IPLOT           0  PLOT CONTROL
                   QSCAL          0.  HYDROGRAPH PLOT SCALE

   IT        HYDROGRAPH TIME DATA
                    NMIN          10  MINUTES IN COMPUTATION INTERVAL
                   IDATE       1   0  STARTING DATE
                   ITIME        0000  STARTING TIME
                      NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                  NDDATE       3   0  ENDING DATE
                  NDTIME        0150  ENDING TIME
                   ICENT          19  CENTURY MARK

             COMPUTATION INTERVAL     .17 HOURS
                  TOTAL TIME BASE   49.83 HOURS

      ENGLISH UNITS
          DRAINAGE AREA          SQUARE MILES
          PRECIPITATION DEPTH    INCHES
          LENGTH, ELEVATION      FEET
          FLOW                   CUBIC FEET PER SECOND
          STORAGE VOLUME         ACRE-FEET
          SURFACE AREA           ACRES
          TEMPERATURE            DEGREES FAHRENHEIT
```

```
JP          MULTI-PLAN OPTION
                 NPLAN            6  NUMBER OF PLANS

JR          MULTI-RATIO OPTION
               RATIOS OF RUNOFF
                1.00
```

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO FLOWS RATIO 1 1.00
HYDROGRAPH AT	TRIPLY	3.74	1	FLOW	350.
				TIME	13.17
			2	FLOW	1021.
				TIME	13.17
			3	FLOW	1521.
				TIME	13.17
			4	FLOW	2075.
				TIME	13.17
			5	FLOW	2610.
				TIME	13.00
			6	FLOW	3149.
				TIME	13.00
ROUTED TO	PLAYA1	3.74	1	FLOW	0.
				TIME	.17
			2	FLOW	0.
				TIME	.17
			3	FLOW	0.
				TIME	.17
			4	FLOW	0.
				TIME	.17
			5	FLOW	0.
				TIME	.17
			6	FLOW	0.
				TIME	.17
			** PEAK STAGES IN FEET **		
			1	STAGE	2786.26
				TIME	27.50
			2	STAGE	2788.97
				TIME	27.83
			3	STAGE	2790.28
				TIME	27.50
			4	STAGE	2790.85
				TIME	27.33
			5	STAGE	2791.49
				TIME	28.33
			6	STAGE	2792.15
				TIME	27.67
ROUTED TO	RT01	3.74	1	FLOW	0.
				TIME	.17
			2	FLOW	0.
				TIME	.17
			3	FLOW	0.
				TIME	.17
			4	FLOW	0.
				TIME	.17
			5	FLOW	0.

				TIME	.17
			6	FLOW	0.
				TIME	.17
HYDROGRAPH AT	ACK-A	.25	1	FLOW	53.
				TIME	12.33
			2	FLOW	148.
				TIME	12.33
			3	FLOW	218.
				TIME	12.33
			4	FLOW	294.
				TIME	12.33
			5	FLOW	365.
				TIME	12.33
			6	FLOW	437.
				TIME	12.33
2 COMBINED AT	2002-A	3.99	1	FLOW	53.
				TIME	12.33
			2	FLOW	148.
				TIME	12.33
			3	FLOW	218.
				TIME	12.33
			4	FLOW	294.
				TIME	12.33
			5	FLOW	365.
				TIME	12.33
			6	FLOW	437.
				TIME	12.33
ROUTED TO	RT02	3.99	1	FLOW	49.
				TIME	12.67
			2	FLOW	140.
				TIME	12.50
			3	FLOW	216.
				TIME	12.50
			4	FLOW	293.
				TIME	12.50
			5	FLOW	357.
				TIME	12.50
			6	FLOW	421.
				TIME	12.50
HYDROGRAPH AT	A-1	.74	1	FLOW	130.
				TIME	12.50
			2	FLOW	363.
				TIME	12.50
			3	FLOW	530.
				TIME	12.50
			4	FLOW	716.
				TIME	12.50
			5	FLOW	902.
				TIME	12.50
			6	FLOW	1074.
				TIME	12.33
2 COMBINED AT	DAVENP	4.73	1	FLOW	167.
				TIME	12.50
			2	FLOW	504.
				TIME	12.50

			3	FLOW	746.
				TIME	12.50
			4	FLOW	1009.
				TIME	12.50
			5	FLOW	1258.
				TIME	12.50
			6	FLOW	1492.
				TIME	12.50
ROUTED TO	RT03	4.73	1	FLOW	159.
				TIME	12.83
			2	FLOW	495.
				TIME	12.67
			3	FLOW	716.
				TIME	12.67
			4	FLOW	957.
				TIME	12.50
			5	FLOW	1203.
				TIME	12.50
			6	FLOW	1459.
				TIME	12.50
HYDROGRAPH AT	B-1	.43	1	FLOW	77.
				TIME	12.50
			2	FLOW	213.
				TIME	12.50
			3	FLOW	319.
				TIME	12.33
			4	FLOW	434.
				TIME	12.33
			5	FLOW	539.
				TIME	12.33
			6	FLOW	652.
				TIME	12.33
2 COMBINED AT	B-1OUT	5.16	1	FLOW	213.
				TIME	12.67
			2	FLOW	659.
				TIME	12.67
			3	FLOW	997.
				TIME	12.50
			4	FLOW	1374.
				TIME	12.50
			5	FLOW	1729.
				TIME	12.50
			6	FLOW	2082.
				TIME	12.50
ROUTED TO	RT08	5.16	1	FLOW	205.
				TIME	12.83
			2	FLOW	637.
				TIME	12.67
			3	FLOW	984.
				TIME	12.67
			4	FLOW	1340.
				TIME	12.67
			5	FLOW	1673.
				TIME	12.67
			6	FLOW	1990.
				TIME	12.67

HYDROGRAPH AT	ACK-B	1.33	1	FLOW	211.
				TIME	12.50
			2	FLOW	613.
				TIME	12.50
			3	FLOW	908.
				TIME	12.50
			4	FLOW	1232.
				TIME	12.50
			5	FLOW	1548.
				TIME	12.50
			6	FLOW	1853.
				TIME	12.50
ROUTED TO	RT05	1.33	1	FLOW	204.
				TIME	12.83
			2	FLOW	605.
				TIME	12.67
			3	FLOW	887.
				TIME	12.67
			4	FLOW	1193.
				TIME	12.67
			5	FLOW	1494.
				TIME	12.67
			6	FLOW	1774.
				TIME	12.67
HYDROGRAPH AT	A-2	1.00	1	FLOW	180.
				TIME	12.50
			2	FLOW	515.
				TIME	12.33
			3	FLOW	777.
				TIME	12.33
			4	FLOW	1054.
				TIME	12.33
			5	FLOW	1308.
				TIME	12.33
			6	FLOW	1581.
				TIME	12.33
2 COMBINED AT	SNELL	2.33	1	FLOW	340.
				TIME	12.67
			2	FLOW	1006.
				TIME	12.50
			3	FLOW	1520.
				TIME	12.50
			4	FLOW	2077.
				TIME	12.50
			5	FLOW	2625.
				TIME	12.50
			6	FLOW	3152.
				TIME	12.50
ROUTED TO	SNELPL	2.33	1	FLOW	24.
				TIME	20.17
			2	FLOW	245.
				TIME	13.50
			3	FLOW	956.
				TIME	13.00
			4	FLOW	1699.

				TIME	12.83
			5	FLOW	2565.
				TIME	12.67
			6	FLOW	2991.
				TIME	12.50
			** PEAK STAGES IN FEET **		
			1	STAGE	2757.64
				TIME	20.17
			2	STAGE	2760.29
				TIME	13.50
			3	STAGE	2760.79
				TIME	13.00
			4	STAGE	2761.17
				TIME	12.83
			5	STAGE	2761.55
				TIME	12.67
			6	STAGE	2761.72
				TIME	12.50
ROUTED TO	RT06	2.33	1	FLOW	24.
				TIME	20.50
			2	FLOW	229.
				TIME	13.83
			3	FLOW	922.
				TIME	13.17
			4	FLOW	1581.
				TIME	12.83
			5	FLOW	2369.
				TIME	12.83
			6	FLOW	2985.
				TIME	12.67
HYDROGRAPH AT	B-2	1.00	1	FLOW	180.
				TIME	12.50
			2	FLOW	515.
				TIME	12.33
			3	FLOW	777.
				TIME	12.33
			4	FLOW	1054.
				TIME	12.33
			5	FLOW	1308.
				TIME	12.33
			6	FLOW	1581.
				TIME	12.33
HYDROGRAPH AT	ACKRLY	.68	1	FLOW	110.
				TIME	12.50
			2	FLOW	318.
				TIME	12.50
			3	FLOW	469.
				TIME	12.50
			4	FLOW	636.
				TIME	12.50
			5	FLOW	799.
				TIME	12.50
			6	FLOW	956.
				TIME	12.50
ROUTED TO	RT04	.68	1	FLOW	106.

				TIME	12.83
			2	FLOW	308.
				TIME	12.67
			3	FLOW	466.
				TIME	12.67
			4	FLOW	629.
				TIME	12.67
			5	FLOW	786.
				TIME	12.67
			6	FLOW	933.
				TIME	12.67
HYDROGRAPH AT	A-3	.92	1	FLOW	124.
				TIME	12.67
			2	FLOW	361.
				TIME	12.67
			3	FLOW	534.
				TIME	12.67
			4	FLOW	726.
				TIME	12.67
			5	FLOW	916.
				TIME	12.67
			6	FLOW	1095.
				TIME	12.67
2 COMBINED AT	JEFFCT	1.60	1	FLOW	226.
				TIME	12.83
			2	FLOW	669.
				TIME	12.67
			3	FLOW	1001.
				TIME	12.67
			4	FLOW	1355.
				TIME	12.67
			5	FLOW	1701.
				TIME	12.67
			6	FLOW	2028.
				TIME	12.67
ROUTED TO	JEFFPL	1.60	1	FLOW	12.
				TIME	24.17
			2	FLOW	23.
				TIME	24.50
			3	FLOW	28.
				TIME	24.50
			4	FLOW	32.
				TIME	24.17
			5	FLOW	36.
				TIME	24.50
			6	FLOW	40.
				TIME	24.50
			** PEAK STAGES IN FEET **		
			1	STAGE	2770.82
				TIME	24.00
			2	STAGE	2772.28
				TIME	24.50
			3	STAGE	2773.46
				TIME	24.50
			4	STAGE	2774.65
				TIME	24.33

			5	STAGE	2776.00
				TIME	24.50
			6	STAGE	2777.43
				TIME	24.50
3 COMBINED AT	ACKWST	4.93	1	FLOW	181.
				TIME	12.50
			2	FLOW	517.
				TIME	12.33
			3	FLOW	1139.
				TIME	13.17
			4	FLOW	2090.
				TIME	12.83
			5	FLOW	2972.
				TIME	12.83
			6	FLOW	4039.
				TIME	12.67
2 COMBINED AT	ACKTOT	10.09	1	FLOW	307.
				TIME	12.83
			2	FLOW	1022.
				TIME	12.67
			3	FLOW	1691.
				TIME	13.00
			4	FLOW	3266.
				TIME	12.83
			5	FLOW	4410.
				TIME	12.83
			6	FLOW	6029.
				TIME	12.67
ROUTED TO	MAHONY	10.09	1	FLOW	34.
				TIME	27.00
			2	FLOW	90.
				TIME	24.50
			3	FLOW	281.
				TIME	16.17
			4	FLOW	596.
				TIME	14.17
			5	FLOW	1169.
				TIME	13.67
			6	FLOW	1914.
				TIME	13.50
			** PEAK STAGES IN FEET **		
			1	STAGE	2736.29
				TIME	27.00
			2	STAGE	2740.11
				TIME	24.50
			3	STAGE	2740.36
				TIME	16.17
			4	STAGE	2740.64
				TIME	14.17
			5	STAGE	2741.04
				TIME	13.67
			6	STAGE	2741.46
				TIME	13.50
ROUTED TO	RT07	10.09	1	FLOW	34.
				TIME	27.17

			2	FLOW	90.
				TIME	24.83
			3	FLOW	281.
				TIME	16.33
			4	FLOW	595.
				TIME	14.33
			5	FLOW	1167.
				TIME	13.83
			6	FLOW	1901.
				TIME	13.67
HYDROGRAPH AT	C-1B	.15	1	FLOW	12.
				TIME	13.33
			2	FLOW	36.
				TIME	13.33
			3	FLOW	54.
				TIME	13.33
			4	FLOW	74.
				TIME	13.33
			5	FLOW	92.
				TIME	13.33
			6	FLOW	112.
				TIME	13.33
HYDROGRAPH AT	C-2	1.00	1	FLOW	135.
				TIME	12.67
			2	FLOW	393.
				TIME	12.67
			3	FLOW	581.
				TIME	12.67
			4	FLOW	789.
				TIME	12.67
			5	FLOW	995.
				TIME	12.67
			6	FLOW	1190.
				TIME	12.67
HYDROGRAPH AT	B-3	1.00	1	FLOW	140.
				TIME	12.67
			2	FLOW	403.
				TIME	12.67
			3	FLOW	594.
				TIME	12.67
			4	FLOW	805.
				TIME	12.67
			5	FLOW	1016.
				TIME	12.67
			6	FLOW	1211.
				TIME	12.67
ROUTED TO	RT09	1.00	1	FLOW	138.
				TIME	13.17
			2	FLOW	397.
				TIME	13.00
			3	FLOW	587.
				TIME	13.00
			4	FLOW	793.
				TIME	13.00
			5	FLOW	991.
				TIME	12.83

			6	FLOW	1197.
				TIME	12.83
HYDROGRAPH AT	C-3	1.00	1	FLOW	153.
				TIME	12.50
			2	FLOW	448.
				TIME	12.50
			3	FLOW	666.
				TIME	12.50
			4	FLOW	904.
				TIME	12.50
			5	FLOW	1137.
				TIME	12.50
			6	FLOW	1363.
				TIME	12.50
ROUTED TO	RT10	1.00	1	FLOW	152.
				TIME	12.83
			2	FLOW	428.
				TIME	12.83
			3	FLOW	646.
				TIME	12.67
			4	FLOW	885.
				TIME	12.67
			5	FLOW	1119.
				TIME	12.67
			6	FLOW	1346.
				TIME	12.67
4 COMBINED AT	ZANT	3.15	1	FLOW	353.
				TIME	13.00
			2	FLOW	1152.
				TIME	12.83
			3	FLOW	1746.
				TIME	12.83
			4	FLOW	2378.
				TIME	12.83
			5	FLOW	2989.
				TIME	12.83
			6	FLOW	3573.
				TIME	12.67
2 COMBINED AT	ZNTIN	13.24	1	FLOW	375.
				TIME	13.17
			2	FLOW	1180.
				TIME	12.83
			3	FLOW	1778.
				TIME	12.83
			4	FLOW	2411.
				TIME	12.83
			5	FLOW	3026.
				TIME	12.83
			6	FLOW	3792.
				TIME	13.17
ROUTED TO	ZNTOUT	13.24	1	FLOW	30.
				TIME	49.83
			2	FLOW	142.
				TIME	17.83
			3	FLOW	444.

				TIME	16.33
			4	FLOW	948.
				TIME	14.67
			5	FLOW	1750.
				TIME	14.17
			6	FLOW	2775.
				TIME	13.83
			** PEAK STAGES IN FEET **		
			1	STAGE	2714.03
				TIME	49.83
			2	STAGE	2715.19
				TIME	17.83
			3	STAGE	2715.46
				TIME	16.33
			4	STAGE	2715.79
				TIME	14.67
			5	STAGE	2716.20
				TIME	14.17
			6	STAGE	2716.63
				TIME	13.83
ROUTED TO	RT11	13.24	1	FLOW	30.
				TIME	49.83
			2	FLOW	142.
				TIME	18.00
			3	FLOW	444.
				TIME	16.50
			4	FLOW	947.
				TIME	14.67
			5	FLOW	1745.
				TIME	14.33
			6	FLOW	2774.
				TIME	14.00
HYDROGRAPH AT	COX	1.00	1	FLOW	137.
				TIME	12.67
			2	FLOW	396.
				TIME	12.67
			3	FLOW	585.
				TIME	12.67
			4	FLOW	795.
				TIME	12.67
			5	FLOW	1002.
				TIME	12.67
			6	FLOW	1197.
				TIME	12.67
2 COMBINED AT	COXIN	14.24	1	FLOW	137.
				TIME	12.67
			2	FLOW	397.
				TIME	12.67
			3	FLOW	590.
				TIME	12.67
			4	FLOW	1041.
				TIME	14.50
			5	FLOW	1909.
				TIME	14.17
			6	FLOW	3020.
				TIME	14.00

ROUTED TO	COXOUT	14.24	1	FLOW	26.
				TIME	49.83
			2	FLOW	56.
				TIME	35.17
			3	FLOW	387.
				TIME	19.67
			4	FLOW	850.
				TIME	16.67
			5	FLOW	1590.
				TIME	15.33
			6	FLOW	2616.
				TIME	14.67
			** PEAK STAGES IN FEET **		
			1	STAGE	2685.08
				TIME	49.83
			2	STAGE	2687.06
				TIME	34.83
			3	STAGE	2687.41
				TIME	19.50
			4	STAGE	2687.73
				TIME	16.67
			5	STAGE	2688.12
				TIME	15.33
			6	STAGE	2688.57
				TIME	14.67
ROUTED TO	RT12	14.24	1	FLOW	26.
				TIME	49.83
			2	FLOW	56.
				TIME	35.33
			3	FLOW	387.
				TIME	19.67
			4	FLOW	849.
				TIME	16.83
			5	FLOW	1588.
				TIME	15.33
			6	FLOW	2606.
				TIME	14.83
HYDROGRAPH AT	PHILIP	1.00	1	FLOW	171.
				TIME	12.50
			2	FLOW	483.
				TIME	12.50
			3	FLOW	709.
				TIME	12.50
			4	FLOW	958.
				TIME	12.50
			5	FLOW	1205.
				TIME	12.50
			6	FLOW	1436.
				TIME	12.50
ROUTED TO	PHILPL	1.00	1	FLOW	7.
				TIME	24.00
			2	FLOW	17.
				TIME	24.00
			3	FLOW	21.
				TIME	24.17

			4	FLOW	24.
				TIME	22.33
			5	FLOW	27.
				TIME	24.17
			6	FLOW	30.
				TIME	24.17
			** PEAK STAGES IN FEET **		
			1	STAGE	2660.48
				TIME	24.00
			2	STAGE	2661.25
				TIME	24.00
			3	STAGE	2661.90
				TIME	24.17
			4	STAGE	2662.57
				TIME	22.33
			5	STAGE	2663.33
				TIME	24.17
			6	STAGE	2664.13
				TIME	24.17
ROUTED TO	RT13	1.00	1	FLOW	7.
				TIME	24.33
			2	FLOW	17.
				TIME	24.17
			3	FLOW	21.
				TIME	24.33
			4	FLOW	24.
				TIME	22.33
			5	FLOW	27.
				TIME	24.33
			6	FLOW	30.
				TIME	24.33
HYDROGRAPH AT	SHORTE	.45	1	FLOW	87.
				TIME	12.33
			2	FLOW	249.
				TIME	12.33
			3	FLOW	373.
				TIME	12.33
			4	FLOW	504.
				TIME	12.33
			5	FLOW	624.
				TIME	12.33
			6	FLOW	752.
				TIME	12.33
3 COMBINED AT	PHLOUT	15.69	1	FLOW	87.
				TIME	12.33
			2	FLOW	249.
				TIME	12.33
			3	FLOW	421.
				TIME	19.67
			4	FLOW	905.
				TIME	16.83
			5	FLOW	1658.
				TIME	15.33
			6	FLOW	2700.
				TIME	14.83

ROUTED TO	RT14	15.69	1	FLOW	82.
				TIME	12.67
			2	FLOW	243.
				TIME	12.50
			3	FLOW	421.
				TIME	19.83
			4	FLOW	904.
				TIME	17.00
			5	FLOW	1655.
				TIME	15.50
			6	FLOW	2693.
				TIME	14.83
HYDROGRAPH AT	B-4	1.17	1	FLOW	88.
				TIME	13.67
			2	FLOW	257.
				TIME	13.50
			3	FLOW	387.
				TIME	13.50
			4	FLOW	530.
				TIME	13.50
			5	FLOW	660.
				TIME	13.50
			6	FLOW	799.
				TIME	13.50
ROUTED TO	RT15	1.17	1	FLOW	88.
				TIME	13.83
			2	FLOW	256.
				TIME	13.67
			3	FLOW	385.
				TIME	13.67
			4	FLOW	526.
				TIME	13.50
			5	FLOW	659.
				TIME	13.50
			6	FLOW	798.
				TIME	13.50
HYDROGRAPH AT	C-4	.97	1	FLOW	172.
				TIME	12.50
			2	FLOW	478.
				TIME	12.50
			3	FLOW	702.
				TIME	12.33
			4	FLOW	956.
				TIME	12.33
			5	FLOW	1189.
				TIME	12.33
			6	FLOW	1441.
				TIME	12.33
2 COMBINED AT	C-4OUT	2.14	1	FLOW	173.
				TIME	12.50
			2	FLOW	512.
				TIME	12.50
			3	FLOW	778.
				TIME	12.50
			4	FLOW	1061.
				TIME	12.50

			5	FLOW	1360.
				TIME	12.50
			6	FLOW	1643.
				TIME	12.50
ROUTED TO	RT16	2.14	1	FLOW	158.
				TIME	13.33
			2	FLOW	498.
				TIME	13.00
			3	FLOW	774.
				TIME	13.00
			4	FLOW	1030.
				TIME	13.00
			5	FLOW	1317.
				TIME	12.83
			6	FLOW	1618.
				TIME	12.83
HYDROGRAPH AT	D/E-3	1.36	1	FLOW	168.
				TIME	12.83
			2	FLOW	482.
				TIME	12.83
			3	FLOW	709.
				TIME	12.67
			4	FLOW	969.
				TIME	12.67
			5	FLOW	1225.
				TIME	12.67
			6	FLOW	1475.
				TIME	12.67
HYDROGRAPH AT	D/E-4	2.65	1	FLOW	237.
				TIME	13.33
			2	FLOW	697.
				TIME	13.17
			3	FLOW	1043.
				TIME	13.17
			4	FLOW	1425.
				TIME	13.17
			5	FLOW	1784.
				TIME	13.17
			6	FLOW	2149.
				TIME	13.17
3 COMBINED AT	DE3OUT	6.15	1	FLOW	502.
				TIME	13.33
			2	FLOW	1594.
				TIME	13.00
			3	FLOW	2409.
				TIME	13.00
			4	FLOW	3264.
				TIME	13.00
			5	FLOW	4106.
				TIME	12.83
			6	FLOW	4987.
				TIME	12.83
ROUTED TO	RT17	6.15	1	FLOW	474.
				TIME	13.83
			2	FLOW	1580.

				TIME	13.33
			3	FLOW	2346.
				TIME	13.33
			4	FLOW	3243.
				TIME	13.17
			5	FLOW	4099.
				TIME	13.17
			6	FLOW	4932.
				TIME	13.17
HYDROGRAPH AT	F-2	1.00	1	FLOW	123.
				TIME	12.83
			2	FLOW	354.
				TIME	12.83
			3	FLOW	521.
				TIME	12.67
			4	FLOW	712.
				TIME	12.67
			5	FLOW	901.
				TIME	12.67
			6	FLOW	1084.
				TIME	12.67
2 COMBINED AT	ROSEWD	7.15	1	FLOW	519.
				TIME	13.83
			2	FLOW	1786.
				TIME	13.33
			3	FLOW	2691.
				TIME	13.17
			4	FLOW	3753.
				TIME	13.17
			5	FLOW	4714.
				TIME	13.17
			6	FLOW	5667.
				TIME	13.17
ROUTED TO	ROSEPL	7.15	1	FLOW	54.
				TIME	24.83
			2	FLOW	175.
				TIME	21.00
			3	FLOW	260.
				TIME	19.33
			4	FLOW	705.
				TIME	16.33
			5	FLOW	1346.
				TIME	15.33
			6	FLOW	2148.
				TIME	14.83

** PEAK STAGES IN FEET **

1	STAGE	2642.35
	TIME	24.83
2	STAGE	2645.15
	TIME	20.83
3	STAGE	2646.08
	TIME	19.33
4	STAGE	2646.49
	TIME	16.33
5	STAGE	2646.87
	TIME	15.33

			6	STAGE	2647.26
				TIME	14.83
HYDROGRAPH AT	C-1A	.13	1	FLOW	10.
				TIME	13.50
			2	FLOW	31.
				TIME	13.33
			3	FLOW	46.
				TIME	13.33
			4	FLOW	63.
				TIME	13.33
			5	FLOW	79.
				TIME	13.33
			6	FLOW	95.
				TIME	13.33
ROUTED TO	RT18	.13	1	FLOW	10.
				TIME	13.83
			2	FLOW	31.
				TIME	13.67
			3	FLOW	46.
				TIME	13.67
			4	FLOW	62.
				TIME	13.50
			5	FLOW	78.
				TIME	13.50
			6	FLOW	95.
				TIME	13.50
HYDROGRAPH AT	D-1	.89	1	FLOW	142.
				TIME	12.50
			2	FLOW	410.
				TIME	12.50
			3	FLOW	608.
				TIME	12.50
			4	FLOW	824.
				TIME	12.50
			5	FLOW	1036.
				TIME	12.50
			6	FLOW	1240.
				TIME	12.50
2 COMBINED AT	D-1OUT	1.02	1	FLOW	142.
				TIME	12.50
			2	FLOW	411.
				TIME	12.50
			3	FLOW	612.
				TIME	12.50
			4	FLOW	832.
				TIME	12.50
			5	FLOW	1049.
				TIME	12.50
			6	FLOW	1260.
				TIME	12.50
ROUTED TO	RT19	1.02	1	FLOW	136.
				TIME	13.00
			2	FLOW	396.
				TIME	12.83
			3	FLOW	575.

				TIME	12.83
			4	FLOW	794.
				TIME	12.67
			5	FLOW	1012.
				TIME	12.67
			6	FLOW	1229.
				TIME	12.67
HYDROGRAPH AT	E-1A	.55	1	FLOW	49.
				TIME	13.33
			2	FLOW	145.
				TIME	13.17
			3	FLOW	216.
				TIME	13.17
			4	FLOW	296.
				TIME	13.17
			5	FLOW	370.
				TIME	13.17
			6	FLOW	446.
				TIME	13.17
2 COMBINED AT	E1AOUT	1.57	1	FLOW	181.
				TIME	13.00
			2	FLOW	517.
				TIME	12.83
			3	FLOW	761.
				TIME	12.83
			4	FLOW	1029.
				TIME	12.83
			5	FLOW	1295.
				TIME	12.83
			6	FLOW	1558.
				TIME	12.67
ROUTED TO	RT20	1.57	1	FLOW	179.
				TIME	13.17
			2	FLOW	510.
				TIME	13.00
			3	FLOW	748.
				TIME	13.00
			4	FLOW	1007.
				TIME	12.83
			5	FLOW	1283.
				TIME	12.83
			6	FLOW	1553.
				TIME	12.83
HYDROGRAPH AT	F-1	1.13	1	FLOW	152.
				TIME	12.67
			2	FLOW	444.
				TIME	12.67
			3	FLOW	656.
				TIME	12.67
			4	FLOW	892.
				TIME	12.67
			5	FLOW	1125.
				TIME	12.67
			6	FLOW	1345.
				TIME	12.67

2 COMBINED AT	SHAW	2.70	1	FLOW	277.
				TIME	13.17
			2	FLOW	863.
				TIME	12.83
			3	FLOW	1320.
				TIME	12.83
			4	FLOW	1814.
				TIME	12.83
			5	FLOW	2292.
				TIME	12.83
			6	FLOW	2751.
				TIME	12.83
3 COMBINED AT	SHWRSE	25.54	1	FLOW	317.
				TIME	13.17
			2	FLOW	1036.
				TIME	12.83
			3	FLOW	1574.
				TIME	12.83
			4	FLOW	2160.
				TIME	12.83
			5	FLOW	3342.
				TIME	15.33
			6	FLOW	5405.
				TIME	14.83
ROUTED TO	RT21	25.54	1	FLOW	314.
				TIME	13.33
			2	FLOW	1018.
				TIME	13.00
			3	FLOW	1521.
				TIME	13.00
			4	FLOW	2116.
				TIME	12.83
			5	FLOW	3332.
				TIME	15.50
			6	FLOW	5391.
				TIME	14.83
HYDROGRAPH AT	F-3/4	1.84	1	FLOW	176.
				TIME	13.17
			2	FLOW	510.
				TIME	13.17
			3	FLOW	764.
				TIME	13.00
			4	FLOW	1046.
				TIME	13.00
			5	FLOW	1318.
				TIME	13.00
			6	FLOW	1588.
				TIME	13.00
ROUTED TO	RTNICK	1.84	1	FLOW	175.
				TIME	13.33
			2	FLOW	510.
				TIME	13.17
			3	FLOW	763.
				TIME	13.17
			4	FLOW	1042.
				TIME	13.17

			5	FLOW	1307.
				TIME	13.17
			6	FLOW	1572.
				TIME	13.17
HYDROGRAPH AT	G-2	1.88	1	FLOW	267.
				TIME	12.67
			2	FLOW	764.
				TIME	12.67
			3	FLOW	1123.
				TIME	12.67
			4	FLOW	1522.
				TIME	12.67
			5	FLOW	1919.
				TIME	12.67
			6	FLOW	2287.
				TIME	12.67
2 COMBINED AT	NICHOL	3.72	1	FLOW	343.
				TIME	12.83
			2	FLOW	1055.
				TIME	12.83
			3	FLOW	1582.
				TIME	12.83
			4	FLOW	2170.
				TIME	12.83
			5	FLOW	2764.
				TIME	12.67
			6	FLOW	3347.
				TIME	12.67
2 COMBINED AT	NICHIN	29.26	1	FLOW	625.
				TIME	13.17
			2	FLOW	2013.
				TIME	13.00
			3	FLOW	3089.
				TIME	12.83
			4	FLOW	4286.
				TIME	12.83
			5	FLOW	5466.
				TIME	12.83
			6	FLOW	6603.
				TIME	12.83
ROUTED TO	NICHPL	29.26	1	FLOW	50.
				TIME	48.50
			2	FLOW	164.
				TIME	35.67
			3	FLOW	589.
				TIME	25.17
			4	FLOW	1572.
				TIME	19.33
			5	FLOW	2813.
				TIME	17.17
			6	FLOW	4718.
				TIME	16.00

** PEAK STAGES IN FEET **

1	STAGE	2617.24
	TIME	48.00

			2	STAGE	2619.95
				TIME	35.50
			3	STAGE	2621.41
				TIME	25.00
			4	STAGE	2622.00
				TIME	19.33
			5	STAGE	2622.54
				TIME	17.17
			6	STAGE	2623.23
				TIME	16.00
ROUTED TO	RT22	29.26	1	FLOW	50.
				TIME	48.67
			2	FLOW	164.
				TIME	35.83
			3	FLOW	589.
				TIME	25.17
			4	FLOW	1571.
				TIME	19.33
			5	FLOW	2812.
				TIME	17.17
			6	FLOW	4710.
				TIME	16.00
HYDROGRAPH AT	G-1A	.32	1	FLOW	56.
				TIME	12.50
			2	FLOW	157.
				TIME	12.50
			3	FLOW	229.
				TIME	12.50
			4	FLOW	310.
				TIME	12.50
			5	FLOW	390.
				TIME	12.50
			6	FLOW	464.
				TIME	12.33
HYDROGRAPH AT	G-1B	.58	1	FLOW	103.
				TIME	12.50
			2	FLOW	287.
				TIME	12.50
			3	FLOW	430.
				TIME	12.33
			4	FLOW	585.
				TIME	12.33
			5	FLOW	726.
				TIME	12.33
			6	FLOW	880.
				TIME	12.33
2 COMBINED AT	G-1	.90	1	FLOW	159.
				TIME	12.50
			2	FLOW	444.
				TIME	12.50
			3	FLOW	656.
				TIME	12.33
			4	FLOW	892.
				TIME	12.33
			5	FLOW	1109.
				TIME	12.33

			6	FLOW	1344.
				TIME	12.33
ROUTED TO	RT23	.90	1	FLOW	156.
				TIME	12.67
			2	FLOW	433.
				TIME	12.50
			3	FLOW	653.
				TIME	12.50
			4	FLOW	886.
				TIME	12.50
			5	FLOW	1105.
				TIME	12.50
			6	FLOW	1328.
				TIME	12.50
HYDROGRAPH AT	H-1B	1.01	1	FLOW	201.
				TIME	12.33
			2	FLOW	572.
				TIME	12.33
			3	FLOW	854.
				TIME	12.33
			4	FLOW	1153.
				TIME	12.33
			5	FLOW	1428.
				TIME	12.33
			6	FLOW	1717.
				TIME	12.33
3 COMBINED AT	CRD846	31.17	1	FLOW	287.
				TIME	12.67
			2	FLOW	910.
				TIME	12.50
			3	FLOW	1334.
				TIME	12.50
			4	FLOW	1801.
				TIME	12.50
			5	FLOW	2956.
				TIME	17.17
			6	FLOW	4881.
				TIME	16.00
ROUTED TO	RT24	31.17	1	FLOW	284.
				TIME	12.67
			2	FLOW	879.
				TIME	12.50
			3	FLOW	1319.
				TIME	12.50
			4	FLOW	1797.
				TIME	12.50
			5	FLOW	2954.
				TIME	17.17
			6	FLOW	4874.
				TIME	16.00
HYDROGRAPH AT	H-1A	.13	1	FLOW	28.
				TIME	12.33
			2	FLOW	81.
				TIME	12.17
			3	FLOW	123.

				TIME	12.17
			4	FLOW	166.
				TIME	12.17
			5	FLOW	203.
				TIME	12.17
			6	FLOW	247.
				TIME	12.17
ROUTED TO	RT25	.13	1	FLOW	27.
				TIME	12.50
			2	FLOW	79.
				TIME	12.33
			3	FLOW	118.
				TIME	12.33
			4	FLOW	158.
				TIME	12.33
			5	FLOW	194.
				TIME	12.33
			6	FLOW	233.
				TIME	12.33
HYDROGRAPH AT	I-1B	.37	1	FLOW	66.
				TIME	12.50
			2	FLOW	186.
				TIME	12.33
			3	FLOW	281.
				TIME	12.33
			4	FLOW	382.
				TIME	12.33
			5	FLOW	473.
				TIME	12.33
			6	FLOW	573.
				TIME	12.33
HYDROGRAPH AT	I-1C	.60	1	FLOW	129.
				TIME	12.33
			2	FLOW	358.
				TIME	12.33
			3	FLOW	527.
				TIME	12.33
			4	FLOW	709.
				TIME	12.33
			5	FLOW	880.
				TIME	12.33
			6	FLOW	1052.
				TIME	12.33
4 COMBINED AT	846AIN	32.27	1	FLOW	440.
				TIME	12.50
			2	FLOW	1397.
				TIME	12.50
			3	FLOW	2054.
				TIME	12.50
			4	FLOW	2850.
				TIME	12.33
			5	FLOW	3600.
				TIME	12.33
			6	FLOW	4968.
				TIME	16.00

ROUTED TO	846PLA	32.27	1	FLOW	15.
				TIME	49.83
			2	FLOW	75.
				TIME	49.83
			3	FLOW	167.
				TIME	49.83
			4	FLOW	365.
				TIME	32.33
			5	FLOW	1292.
				TIME	23.50
			6	FLOW	2346.
				TIME	20.00
			** PEAK STAGES IN FEET **		
			1	STAGE	2581.01
				TIME	49.83
			2	STAGE	2582.91
				TIME	49.83
			3	STAGE	2585.00
				TIME	49.83
			4	STAGE	2586.21
				TIME	32.17
			5	STAGE	2586.84
				TIME	23.50
			6	STAGE	2587.35
				TIME	20.00
HYDROGRAPH AT	I-1B	.31	1	FLOW	66.
				TIME	12.33
			2	FLOW	192.
				TIME	12.17
			3	FLOW	293.
				TIME	12.17
			4	FLOW	397.
				TIME	12.17
			5	FLOW	483.
				TIME	12.17
			6	FLOW	589.
				TIME	12.17
2 COMBINED AT	846BIN	32.58	1	FLOW	67.
				TIME	12.33
			2	FLOW	192.
				TIME	12.17
			3	FLOW	294.
				TIME	12.17
			4	FLOW	399.
				TIME	12.17
			5	FLOW	1302.
				TIME	23.50
			6	FLOW	2361.
				TIME	20.00
ROUTED TO	846PLB	32.58	1	FLOW	3.
				TIME	49.83
			2	FLOW	24.
				TIME	49.83
			3	FLOW	165.
				TIME	49.83
			4	FLOW	361.

				TIME	33.50
			5	FLOW	1279.
				TIME	24.33
			6	FLOW	2318.
				TIME	20.83
			** PEAK STAGES IN FEET **		
			1	STAGE	2585.33
				TIME	49.83
			2	STAGE	2586.36
				TIME	49.83
			3	STAGE	2587.19
				TIME	49.83
			4	STAGE	2587.37
				TIME	33.50
			5	STAGE	2587.94
				TIME	24.17
			6	STAGE	2588.43
				TIME	20.83
HYDROGRAPH AT	J-1	.47	1	FLOW	101.
				TIME	12.33
			2	FLOW	280.
				TIME	12.33
			3	FLOW	413.
				TIME	12.33
			4	FLOW	556.
				TIME	12.33
			5	FLOW	689.
				TIME	12.33
			6	FLOW	824.
				TIME	12.33
2 COMBINED AT	846CIN	33.05	1	FLOW	101.
				TIME	12.33
			2	FLOW	280.
				TIME	12.33
			3	FLOW	413.
				TIME	12.33
			4	FLOW	556.
				TIME	12.33
			5	FLOW	1289.
				TIME	24.00
			6	FLOW	2340.
				TIME	20.83
ROUTED TO	846PLC	33.05	1	FLOW	11.
				TIME	15.17
			2	FLOW	42.
				TIME	13.17
			3	FLOW	162.
				TIME	49.83
			4	FLOW	350.
				TIME	35.67
			5	FLOW	1218.
				TIME	25.50
			6	FLOW	2234.
				TIME	21.83
			** PEAK STAGES IN FEET **		

1	STAGE	2580.06
	TIME	15.17
2	STAGE	2580.14
	TIME	13.17
3	STAGE	2580.35
	TIME	49.83
4	STAGE	2580.58
	TIME	35.50
5	STAGE	2581.34
	TIME	25.50
6	STAGE	2582.01
	TIME	21.83

*** NORMAL END OF HEC-1 ***

NORMAL END OF HEC-1

HEC1 S/N: 1090525070   HMVersion: 5.20   Data File: ACK-EX.HC1

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*****************************************                              ****************************************
*                                       *                              *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                              *   U.S. ARMY CORPS OF ENGINEERS       *
*             FEBRUARY 1981             *                              * THE HYDROLOGIC ENGINEERING CENTER    *
*           REVISED 02 AUG 88           *                              *         609 SECOND STREET            *
*                                       *                              *      DAVIS, CALIFORNIA 95616         *
*  RUN DATE  09/13/1990  TIME  10:42:33 *                              *                                      *
*                                       *                              *                                      *
*****************************************                              ****************************************
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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X               X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX         XXX
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::::::::::::::::::::::::::::::::::::::::::
::::::::::::::::::::::::::::::::::::::::::
:::                                    :::
:::  Full Microcomputer Implementation :::
:::                by                  :::
:::        Haestad Methods, Inc.       :::
:::                                    :::
::::::::::::::::::::::::::::::::::::::::::
::::::::::::::::::::::::::::::::::::::::::
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37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
LINE    ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

        *DIAGRAM
        ID    MARTIN COUNTY FLOOD CONTROL STUDY     JOB NO. 06901-001-036
        ID    HDR ENGINEERING, INC.                 AUSTIN, TEXAS
        ID
        ID    ACKERLY AREA MODEL TO HWY 846 PLAYAS
        ID
        ID    COMPUTING 2-YR, 5-YR, 10-YR, 25-YR, 50-YR, AND 100-YR FLOOD EVENTS
        ID    FOR ACKERLY/KNOTT AREA USING PLAN OPTION IN HEC-1.
        ID    EXISTING CONDITIONS
        ID              PLAN 1:   2-YEAR EVENT
        ID              PLAN 2:   5-YEAR EVENT
        ID              PLAN 3:  10-YEAR EVENT
        ID              PLAN 4:  25-YEAR EVENT
        ID              PLAN 5:  50-YEAR EVENT
        ID              PLAN 6: 100-YEAR EVENT
        ID
        ID
        IT      10                     300
        IO       5       0
        JP       6

        KK  TRIPLY
        KM    RUNOFF HYDROGRAPH FOR TRI-PLAYA SUBBASIN
        KP       1
        PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
        BA    3.74
        LS       0      72
        UD    0.91
        KP       2
        PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
        KP       3
        PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
        KP       4
        PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
        KP       5
        PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
        KP       6
        PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

        KK  PLAYA1
        KM    ROUTE INFLOW HYDROGRAPH THROUGH PLAYA NO. 1
        RS       1    ELEV  2782.5
        SV       0      25   294.3  2207.6  4120.9
        SQ       0       0       0       0   50000
        SE  2782.5    2785    2790    2800    2810

        KK    RT01
        KM    ROUTE PLAYA NO. 1 OUTFLOW TO ACKERLY FAR WEST CONFLUENCE
        RK    3900   .0026   0.030            TRAP       0       4
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LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  46           KK   ACK-A
  47           KM    RUNOFF HYDROGRAPH FOR ACKERLY-A SUBBASIN
  48           PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
  49           BA    0.25
  50           LS       0      72
  51           UD    0.19
  52           KP       2
  53           PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
  54           KP       3
  55           PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
  56           KP       4
  57           PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
  58           KP       5
  59           PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
  60           KP       6
  61           PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

  62           KK  2002-A
  63           KM    COMBINE ACK-A WITH RT01
  64           HC       2

  65           KK    RT02
  66           KM    ROUTE 2002-A TO DAVENP
  67           RK    4500   .0055   0.030           TRAP      10       6

  68           KK     A-1
  69           KM    RUNOFF HYDROGRAPH FOR A-1 SUBBASIN
  70           PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
  71           BA    0.74
  72           LS       0      72
  73           UD    0.30
  74           KP       2
  75           PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
  76           KP       3
  77           PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
  78           KP       4
  79           PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
  80           KP       5
  81           PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
  82           KP       6
  83           PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

  84           KK  DAVENP
  85           KM    COMBINE RT02 WITH A-1
  86           HC       2

  87           KK    RT03
  88           KM    ROUTE DAVENPORT PLAYA OUTFLOW HYDROGRAPH TO B-1 OUT
  89           RK    5200   .0050   0.030           TRAP       0       4
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


  90          KK     B-1
  91          KM    COMPUTE RUNOFF HYDROGRAPH FOR B-1 SUBBASIN
  92          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
  93          BA    0.43
  94          LS       0      72
  95          UD    0.28
  96          KP       2
  97          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
  98          KP       3
  99          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 100          KP       4
 101          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 102          KP       5
 103          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 104          KP       6
 105          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 106          KK  B-1OUT
 107          KM    COMBINE RT03 WITH B-1
 108          HC       2

 109          KK    RT08
 110          KM    ROUTE B-1OUT TO C-1BOUT
 111          RK    5200   .0048   0.030            TRAP       0     4.0

 112          KK   ACK-B
 113          KM    RUNOFF HYDROGRAPH FOR ACKERLY WEST SUBBASIN
 114          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 115          BA    1.33
 116          LS       0      72
 117          UD    0.36
 118          KP       2
 119          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 120          KP       3
 121          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 122          KP       4
 123          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 124          KP       5
 125          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 126          KP       6
 127          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 128          KK    RT05
 129          KM    ROUTE 2002-B TO A-2OUT
 130          RK    5400   .0043   0.030            TRAP       0     3.6

 131          KK     A-2
 132          KM    RUNOFF HYDROGRAPH FOR A-2
 133          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 134          BA    1.00
 135          LS       0      72
 136          UD    0.26
 137          KP       2
 138          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
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LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 139           KP       3
 140           PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 141           KP       4
 142           PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 143           KP       5
 144           PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 145           KP       6
 146           PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 147           KK   SNELL
 148           KM    COMBINE RT05 WITH A-2
 149           HC       2

 150           KK    RT06
 151           KM    ROUTE A-2OUT TO ACKWST
 152           RK    5500   .0045   0.030            TRAP       0     4.0

 153           KK     B-2
 154           KM    RUNOFF HYDROGRAPH FOR B-2
 155           PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 156           BA    1.00
 157           LS       0      72
 158           UD    0.26
 159           KP       2
 160           PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 161           KP       3
 162           PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 163           KP       4
 164           PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 165           KP       5
 166           PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 167           KP       6
 168           PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 169           KK  ACKRLY
 170           KM    RUNOFF HYDROGRAPH FOR ACKERLY SUBBASIN
 171           PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 172           BA    0.68
 173           LS       0      72
 174           UD    0.35
 175           KP       2
 176           PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 177           KP       3
 178           PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 179           KP       4
 180           PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 181           KP       5
 182           PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 183           KP       6
 184           PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 185          KK    RT04
 186          KM    ROUTE ACKRLY SUBBASIN TO 2002-B
 187          RK    4600   .0022   0.030             TRAP       0       4

 188          KK     A-3
 189          KM    RUNOFF HYDROGRAPH FOR A-3
 190          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 191          BA    0.92
 192          LS       0      72
 193          UD    0.50
 194          KP       2
 195          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 196          KP       3
 197          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 198          KP       4
 199          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 200          KP       5
 201          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 202          KP       6
 203          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 204          KK  JEFFCT
 205          KM    COMBINE ROUTED ACKERLY HYDROGRAPH WITH A-3 HYDROGRAPH
 206          HC       2

 207          KK  ACKWST
 208          KM    COMBINE RT06 WITH B-2 AND A-3
 209          HC       3

 210          KK  MAHONY
 211          KM    COMBINE ACKWST RUNOFF HYDROGRAPH WITH RT08 (DAVENPORT) HYDROGRAPH
 212          HC       2

 213          KK    RT07
 214          KM    ROUTE ACKWST TO C1BOUT
 215          RK    5900   .0037   0.030             TRAP       0     4.0

 216          KK    C-1B
 217          KM    RUNOFF HYDROGRAPH FOR C-1B
 218          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 219          BA    0.15
 220          LS       0      72
 221          UD    1.10
 222          KP       2
 223          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 224          KP       3
 225          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 226          KP       4
 227          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 228          KP       5
 229          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 230          KP       6
 231          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 232          KK     C-2
 233          KM    RUNOFF HYDROGRAPH FOR C-2
 234          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 235          BA    1.00
 236          LS       0      72
 237          UD    0.50
 238          KP       2
 239          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 240          KP       3
 241          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 242          KP       4
 243          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 244          KP       5
 245          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 246          KP       6
 247          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 248          KK     B-3
 249          KM    RUNOFF HYDROGRAPH FOR B-3
 250          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 251          BA    1.00
 252          LS       0      72
 253          UD    0.47
 254          KP       2
 255          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 256          KP       3
 257          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 258          KP       4
 259          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 260          KP       5
 261          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 262          KP       6
 263          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 264          KK    RT09
 265          KM    ROUTE B-3 TO C1BOUT
 266          RK   10400   .0038   0.030            TRAP       0     4.0

 267          KK     C-3
 268          KM    RUNOFF HYDROGRAPH FOR C-3
 269          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 270          BA    1.00
 271          LS       0      72
 272          UD    0.38
 273          KP       2
 274          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 275          KP       3
 276          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 277          KP       4
 278          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 279          KP       5
 280          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 281          KP       6
 282          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


 283         KK    RT10
 284         KM    ROUTE C-3 TO C1BOUT
 285         RK    5200   .0019   0.030            TRAP       0     4.0

 286         KK    ZANT
 287         KM    COMBINE C-1B - C-2 - RT10 - RT09 TO GIVE ZANT SUBBASIN RUNOFF HYDROGRAPH
 288         HC       4

 289         KK  ZNTOUT
 290         KM    COMBINE ACKTOT (DAVENPORT & ACKERLY WEST) WITH ZANT
 291         HC       2

 292         KK    RT11
 293         KM    ROUTE ZNTOUT TO COXOUT
 294         RK    5200   .0040   0.030            TRAP       0     4.0

 295         KK     COX
 296         KM    RUNOFF HYDROGRAPH FOR COX SUBBASIN
 297         PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 298         BA    1.00
 299         LS       0      72
 300         UD    0.49
 301         KP       2
 302         PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 303         KP       3
 304         PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 305         KP       4
 306         PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 307         KP       5
 308         PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 309         KP       6
 310         PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 311         KK  COXOUT
 312         KM    COMBINE RT11 WITH COX
 313         HC       2

 314         KK    RT12
 315         KM    ROUTE COXOUT TO PHLOUT
 316         RK    5200   .0044   0.030            TRAP       0     4.0

 317         KK  PHILIP
 318         KM    RUNOFF HYDROGRAPH FOR PHILLIPS SUBBASIN
 319         PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 320         BA    1.00
 321         LS       0      72
 322         UD    0.32
 323         KP       2
 324         PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 325         KP       3
 326         PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 327         KP       4
 328         PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 329         KP       5
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 330          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 331          KP       6
 332          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 333          KK  PHILPL
 334          KM    ROUTE PHILIP THROUGH PHILLIPS PLAYA
 335          RS       1    ELEV    2660
 336          SV       0     193     386
 337          SE    2660    2665    2670
 338          SS    2660    5100     2.6     1.5

 339          KK    RT13
 340          KM    ROUTE PHILPL TO PHLOUT
 341          RK    2700   .0019   0.030            TRAP       0     4.0

 342          KK  SHORTE
 343          KM    RUNOFF HYDROGRAPH FOR SHORTES SUBBASIN
 344          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 345          BA    0.45
 346          LS       0      72
 347          UD    0.23
 348          KP       2
 349          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 350          KP       3
 351          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 352          KP       4
 353          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 354          KP       5
 355          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 356          KP       6
 357          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 358          KK  PHLOUT
 359          KM    COMBINE RT13 WITH RT12 AND SHORTE
 360          HC       3

 361          KK    RT14
 362          KM    ROUTE PHLOUT TO F-1OUT
 363          RK    5200   .0046   0.030            TRAP       0     4.0

 364          KK     B-4
 365          KM    RUNOFF HYDROGRAPH FOR B-4
 366          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 367          BA    1.17
 368          LS       0      72
 369          UD    1.25
 370          KP       2
 371          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 372          KP       3
 373          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 374          KP       4
 375          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 376          KP       5
 377          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 378          KP       6
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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 379        PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 380        KK    RT15
 381        KM    ROUTE B-4 TO C-4OUT
 382        RK    5400   .0070   0.030            TRAP       0     4.0

 383        KK     C-4
 384        KM    RUNOFF HYDROGRAPH FOR C-4
 385        PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 386        BA    0.97
 387        LS       0      72
 388        UD    0.29
 389        KP       2
 390        PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 391        KP       3
 392        PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 393        KP       4
 394        PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 395        KP       5
 396        PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 397        KP       6
 398        PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 399        KK  C-4OUT
 400        KM    COMBINE RT15 WITH C-4
 401        HC       2

 402        KK    RT16
 403        KM    ROUTE C-4OUT TO DE3OUT
 404        RK   16400   .0042   0.030            TRAP       0     4.0

 405        KK   D/E-3
 406        KM    RUNOFF HYDROGRAPH FOR D/E-3
 407        PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 408        BA    1.36
 409        LS       0      72
 410        UD    0.59
 411        KP       2
 412        PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 413        KP       3
 414        PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 415        KP       4
 416        PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 417        KP       5
 418        PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 419        KP       6
 420        PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 421        KK   D/E-4
 422        KM    RUNOFF HYDROGRAPH FOR D/E-4
 423        PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 424        BA    2.65
 425        LS       0      72
 426        UD    0.97
 427        KP       2
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 428          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 429          KP       3
 430          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 431          KP       4
 432          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 433          KP       5
 434          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 435          KP       6
 436          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 437          KK  DE3OUT
 438          KM    COMBINE RT16 - D/E-3 - D/E-4
 439          HC       3

 440          KK    RT17
 441          KM    ROUTE DE3OUT TO ROSEWD
 442          RK   10400   .0027   0.030            TRAP       0     4.0

 443          KK     F-2
 444          KM    RUNOFF HYDROGRAPH FOR F-2
 445          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 446          BA    1.00
 447          LS       0      72
 448          UD    0.59
 449          KP       2
 450          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 451          KP       3
 452          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 453          KP       4
 454          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 455          KP       5
 456          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 457          KP       6
 458          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 459          KK  ROSEWD
 460          KM    COMBINE RT17 WITH F-2
 461          HC       2

 462          KK  ROSEPL
 463          KM    ROUTE ROSEWD THROUGH ROSEWOOD PLAYA
 464          RS       1    ELEV    2640
 465          SV       0     276    1060
 466          SE    2640    2645    2650
 467          SS    2640    5000     2.6     1.5

 468          KK    C-1A
 469          KM    RUNOFF HYDROGRAPH FOR C-1A
 470          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 471          BA    0.13
 472          LS       0      72
 473          UD    1.13
 474          KP       2
 475          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 476          KP       3
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 477          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 478          KP       4
 479          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 480          KP       5
 481          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 482          KP       6
 483          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 484          KK    RT18
 485          KM    ROUTE C-1A TO D-1OUT
 486          RK    5400   .0050   0.030            TRAP       0     4.0

 487          KK     D-1
 488          KM    RUNOFF HYDROGRAPH FOR D-1
 489          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 490          BA    0.89
 491          LS       0      72
 492          UD    0.36
 493          KP       2
 494          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 495          KP       3
 496          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 497          KP       4
 498          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 499          KP       5
 500          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 501          KP       6
 502          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 503          KK  D-1OUT
 504          KM    COMBINE RT18 WITH D-1
 505          HC       2

 506          KK    RT19
 507          KM    ROUTE D-1OUT TO E1AOUT
 508          RK    6700   .0025   0.030            TRAP       0     4.0

 509          KK    E-1A
 510          KM    RUNOFF HYDROGRAPH FOR E-1A
 511          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 512          BA    0.55
 513          LS       0      72
 514          UD    0.97
 515          KP       2
 516          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 517          KP       3
 518          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 519          KP       4
 520          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 521          KP       5
 522          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 523          KP       6
 524          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


 525          KK  E1AOUT
 526          KM    COMBINE RT19 WITH E-1A
 527          HC       2

 528          KK    RT20
 529          KM    ROUTE E1AOUT TO F-1OUT
 530          RK    5200   .0038   0.030            TRAP       0     4.0

 531          KK     F-1
 532          KM    RUNOFF HYDROGRAPH FOR F-1
 533          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 534          BA    1.13
 535          LS       0      72
 536          UD    0.50
 537          KP       2
 538          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 539          KP       3
 540          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 541          KP       4
 542          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 543          KP       5
 544          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 545          KP       6
 546          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 547          KK    SHAW
 548          KM    COMBINE F-1 WITH RT20 TO GIVE RUNOFF HYDROGRAPH FOR SHAW SUBBASIN
 549          HC       2

 550          KK  SHWRSE
 551          KM    COMBINE SHAW - ROSEPL - AND PHLOUT HYDROGRAPHS AT INTERSECTION
 552          HC       3

 553          KK    RT21
 554          KM    ROUTE SHWRSE TO NICHIN
 555          RK    5200   .0050   0.030            TRAP       0     4.0

 556          KK   F-3/4
 557          KM    RUNOFF HYDROGRAPH FOR F-3/4
 558          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 559          BA    1.84
 560          LS       0      72
 561          UD    0.88
 562          KP       2
 563          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 564          KP       3
 565          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 566          KP       4
 567          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 568          KP       5
 569          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 570          KP       6
 571          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


 572          KK  RTNICK
 573          KM     ROUTE F-3/4 TO NICHIN
 574          RK    5200   .0050   0.030            TRAP       0     4.0

 575          KK     G-2
 576          KM    RUNOFF HYDROGRAPH FOR G-2
 577          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 578          BA    1.88
 579          LS       0      72
 580          UD    0.46
 581          KP       2
 582          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 583          KP       3
 584          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 585          KP       4
 586          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 587          KP       5
 588          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 589          KP       6
 590          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 591          KK  NICHOL
 592          KM    COMBINE RTNICK WITH G-2 TO GIVE NICHOL SUBBASIN RUNOFF HYDROGRAPH
 593          HC       2

 594          KK  NICHIN
 595          KM    COMBINE NICHOL WITH RT21 TO GIVE INFLOW HYDROGRAPH INTO NICHOL'S LAKE
 596          HC       2

 597          KK  NICHPL
 598          KM    ROUTE NICHOL'S LAKE INFLOW HYDROGRAPH (NICHIN) THROUGH NICHOL'S LAKE
 599          RS       1    ELEV    2615
 600          SV       0     120     388     947    1935
 601          SE    2605    2610    2615    2620    2625
 602          SS    2615    1300     2.6     1.5

 603          KK    RT22
 604          KM    ROUTE NICKLE LAKE OUTFLOW HYDROGRAPH TO CRD846
 605          RK    5500   .0055   0.030            TRAP       8     2.8

 606          KK    G-1A
 607          KM    RUNOFF HYDROGRAPH FOR G-1A
 608          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 609          BA    0.32
 610          LS       0      72
 611          UD    0.30
 612          KP       2
 613          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 614          KP       3
 615          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 616          KP       4
 617          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 618          KP       5
 619          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
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LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 620           KP       6
 621           PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 622           KK     G-1B
 623           KM     RUNOFF HYDROGRAPH FOR G-1B
 624           PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 625           BA    0.58
 626           LS       0      72
 627           UD    0.28
 628           KP       2
 629           PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 630           KP       3
 631           PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 632           KP       4
 633           PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 634           KP       5
 635           PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 636           KP       6
 637           PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 638           KK      G-1
 639           KM     COMBINE G-1A WITH G-1B
 640           HC       2

 641           KK     RT23
 642           KM     ROUTE G-1 TO CRD846
 643           RK    5300   .0042   0.030           TRAP        8     2.8

 644           KK     H-1B
 645           KM     RUNOFF HYDROGRAPH FOR H-1B
 646           PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 647           BA    1.01
 648           LS       0      72
 649           UD    0.22
 650           KP       2
 651           PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 652           KP       3
 653           PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 654           KP       4
 655           PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 656           KP       5
 657           PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 658           KP       6
 659           PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 660           KK  CRD846
 661           KM      COMBINE H-1B - RT23 - RT22
 662           HC       3

 663           KK     RT24
 664           KM     ROUTE H-1 TO 846AIN
 665           RK    3200   .0063   0.030           TRAP        8     2.8
```

LINE	ID	1	2	3	4	5	6	7	8	9	10
666	KK	H-1A									
667	KM	RUNOFF HYDROGRAPH FOR H-1A									
668	PH	50	32.4	0.42	0.8	1.4	1.6	1.7	2.1	2.4	2.8
669	BA	0.13									
670	LS	0	72								
671	UD	0.13									
672	KP	2									
673	PH	20	32.4	0.51	1.0	1.9	2.2	2.3	2.8	3.3	3.9
674	KP	3									
675	PH	10	32.4	0.58	1.2	2.2	2.6	2.8	3.4	3.9	4.6
676	KP	4									
677	PH	4	32.4	0.67	1.4	2.6	3.1	3.3	3.8	4.7	5.3
678	KP	5									
679	PH	2	32.4	0.75	1.5	3.0	3.4	3.7	4.4	5.3	6.1
680	KP	6									
681	PH	1	32.4	0.82	1.7	3.3	3.8	4.2	5.1	5.9	6.9
682	KK	RT25									
683	KM	ROUTE H-1A TO 846AIN									
684	RK	2800	.0039	0.030		TRAP	0	4			
685	KK	I-1B									
686	KM	RUNOFF HYDROGRAPH FOR I-1B									
687	PH	50	32.4	0.42	0.8	1.4	1.6	1.7	2.1	2.4	2.8
688	BA	0.37									
689	LS	0	72								
690	UD	0.27									
691	KP	2									
692	PH	20	32.4	0.51	1.0	1.9	2.2	2.3	2.8	3.3	3.9
693	KP	3									
694	PH	10	32.4	0.58	1.2	2.2	2.6	2.8	3.4	3.9	4.6
695	KP	4									
696	PH	4	32.4	0.67	1.4	2.6	3.1	3.3	3.8	4.7	5.3
697	KP	5									
698	PH	2	32.4	0.75	1.5	3.0	3.4	3.7	4.4	5.3	6.1
699	KP	6									
700	PH	1	32.4	0.82	1.7	3.3	3.8	4.2	5.1	5.9	6.9
701	KK	I-1C									
702	KM	RUNOFF HYDROGRAPH FOR I-1C									
703	PH	50	32.4	0.42	0.8	1.4	1.6	1.7	2.1	2.4	2.8
704	BA	0.60									
705	LS	0	72								
706	UD	0.18									
707	KP	2									
708	PH	20	32.4	0.51	1.0	1.9	2.2	2.3	2.8	3.3	3.9
709	KP	3									
710	PH	10	32.4	0.58	1.2	2.2	2.6	2.8	3.4	3.9	4.6
711	KP	4									
712	PH	4	32.4	0.67	1.4	2.6	3.1	3.3	3.8	4.7	5.3
713	KP	5									
714	PH	2	32.4	0.75	1.5	3.0	3.4	3.7	4.4	5.3	6.1
715	KP	6									
716	PH	1	32.4	0.82	1.7	3.3	3.8	4.2	5.1	5.9	6.9

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 717          KK  846AIN
 718          KM    COMBINE RT24 - RT25 - I-1B - I-1C
 719          HC       4

 720          KK  846PLA
 721          KM    ROUTE 846AIN HYDROGRAPH THROUGH 846 PLAYA A
 722          RS       1    ELEV    2580
 723          SV       0     357    1189    2937
 724          SE    2575    2580    2585    2590
 725          SS    2580     700     2.6     1.5

 726          KK    I-1B
 727          KM    RUNOFF HYDROGRAPH FOR I-1B
 728          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 729          BA    0.31
 730          LS       0      72
 731          UD    0.13
 732          KP       2
 733          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 734          KP       3
 735          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 736          KP       4
 737          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 738          KP       5
 739          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 740          KP       6
 741          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 742          KK  846BIN
 743          KM    COMBINE I-1A RUNOFF HYDROGRAPH WITH OUTFLOW FROM 846 PLAYA A
 744          HC       2

 745          KK  846PLB
 746          KM    ROUTE 846BIN HYDROGRAPH THROUGH 846 PLAYA B
 747          RS       1    ELEV    2585
 748          SV       0     216     663
 749          SE    2580    2585    2590
 750          SS    2585    1500     2.6     1.5

 751          KK     J-1
 752          KM    RUNOFF HYDROGRAPH FOR J-1
 753          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 754          BA    0.47
 755          LS       0      72
 756          UD    0.18
 757          KP       2
 758          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 759          KP       3
 760          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 761          KP       4
 762          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 763          KP       5
 764          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 765          KP       6
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LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 766           PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 767           KK  846CIN
 768           KM    COMBINE J-1 RUNOFF HYDROGRAPH WITH OUTFLOW HYDROGRAPH FROM 846 PLAYA B
 769           HC       2

 770           KK  846PLC
 771           RS       1    ELEV    2580
 772           SV       0     258     736
 773           SE    2575    2580    2585
 774           SS    2580     300     2.6     1.5
 775           ZZ
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                 SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    20      TRIPLY
                 V
                 V
    37      PLAYA1
                 V
                 V
    43        RT01
                 .
                 .
    46           .         ACK-A
                 .             .
                 .             .
    62      2002-A.............
                 V
                 V
    65        RT02
                 .
                 .
    68           .           A-1
                 .             .
                 .             .
    84      DAVENP.............
                 V
                 V
    87        RT03
                 .
                 .
    90           .           B-1
                 .             .
                 .             .
   106      B-1OUT.............
                 V
                 V
   109        RT08
                 .
                 .
   112           .         ACK-B
                 .             V
                 .             V
   128           .          RT05
                 .             .
                 .             .
   131           .             .           A-2
                 .             .             .
                 .             .             .
   147           .         SNELL.............
                 .             V
                 .             V
   150           .          RT06
                 .             .
                 .             .
   153           .             .           B-2
                 .             .             .
```

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                .            .            .
169             .            .            .         ACKRLY
                .            .            .              V
                .            .            .              V
185             .            .            .           RT04
                .            .            .              .
                .            .            .              .
188             .            .            .              .           A-3
                .            .            .              .             .
                .            .            .              .             .
204             .            .            .         JEFFCT.............
                .            .            .              .
                .            .            .              .
207             .       ACKWST.........................
                .            .
                .            .
210        MAHONY.............
                V
                V
213          RT07
                .
                .
216             .         C-1B
                .            .
                .            .
232             .            .          C-2
                .            .            .
                .            .            .
248             .            .            .            B-3
                .            .            .              V
                .            .            .              V
264             .            .            .           RT09
                .            .            .              .
                .            .            .              .
267             .            .            .              .           C-3
                .            .            .              .             V
                .            .            .              .             V
283             .            .            .              .          RT10
                .            .            .              .             .
                .            .            .              .             .
286             .         ZANT.....................................
                .            .
                .            .
289        ZNTOUT.............
                V
                V
292          RT11
                .
                .
295             .          COX
                .            .
                .            .
311        COXOUT.............
                V
                V
314          RT12
                .
                .
317             .       PHILIP
                .            V
```

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              .           V
333           .      PHILPL
              .           V
              .           V
339           .        RT13
              .           .
              .           .
342           .           .      SHORTE
              .           .           .
              .           .           .
358      PHLOUT........................
              V
              V
361        RT14
              .
              .
364           .         B-4
              .           V
              .           V
380           .        RT15
              .           .
              .           .
383           .           .         C-4
              .           .           .
              .           .           .
399           .      C-4OUT............
              .           V
              .           V
402           .        RT16
              .           .
              .           .
405           .           .       D/E-3
              .           .           .
              .           .           .
421           .           .           .       D/E-4
              .           .           .           .
              .           .           .           .
437           .      DE3OUT........................
              .           V
              .           V
440           .        RT17
              .           .
              .           .
443           .           .         F-2
              .           .           .
              .           .           .
459           .      ROSEWD............
              .           V
              .           V
462           .      ROSEPL
              .           .
              .           .
468           .           .        C-1A
              .           .           V
              .           .           V
484           .           .        RT18
              .           .           .
              .           .           .
487           .           .           .         D-1
              .           .           .           .
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                .          .         .          .
503             .          .     D-1OUT..........
                .          .         V
                .          .         V
506             .          .       RT19
                .          .         .
                .          .         .
509             .          .         .        E-1A
                .          .         .          .
                .          .         .          .
525             .          .     E1AOUT..........
                .          .         V
                .          .         V
528             .          .       RT20
                .          .         .
                .          .         .
531             .          .         .         F-1
                .          .         .          .
                .          .         .          .
547             .          .       SHAW..........
                .          .         .
                .          .         .
550         SHWRSE.......................
                V
                V
553           RT21
                .
                .
556             .      F-3/4
                .          V
                .          V
572             .     RTNICK
                .          .
                .          .
575             .          .        G-2
                .          .         .
                .          .         .
591             .     NICHOL..........
                .          .
                .          .
594         NICHIN..........
                V
                V
597         NICHPL
                V
                V
603           RT22
                .
                .
606             .       G-1A
                .          .
                .          .
622             .          .       G-1B
                .          .         .
                .          .         .
638             .        G-1..........
                .          V
                .          V
641             .       RT23
                .          .
```

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                  .             .
 644              .             .           H-1B
                  .             .              .
                  .             .              .
 660       CRD846.......................
                  V
                  V
 663         RT24
                  .
                  .
 666              .          H-1A
                  .             V
                  .             V
 682              .          RT25
                  .             .
                  .             .
 685              .             .          I-1B
                  .             .             .
                  .             .             .
 701              .             .             .           I-1C
                  .             .             .              .
                  .             .             .              .
 717       846AIN.................................
                  V
                  V
 720       846PLA
                  .
                  .
 726              .          I-1B
                  .             .
                  .             .
 742       846BIN............
                  V
                  V
 745       846PLB
                  .
                  .
 751              .           J-1
                  .             .
                  .             .
 767       846CIN............
                  V
                  V
 770       846PLC
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

HEC1 S/N: 1090525070   HMVersion: 5.20   Data File: ACK-EX.HC1

```
****************************************                 ****************************************
*                                      *                 *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                 *   U.S. ARMY CORPS OF ENGINEERS       *
*              FEBRUARY 1981           *                 * THE HYDROLOGIC ENGINEERING CENTER    *
*            REVISED 02 AUG 88         *                 *          609 SECOND STREET           *
*                                      *                 *       DAVIS, CALIFORNIA 95616        *
* RUN DATE  09/13/1990  TIME  10:42:33 *                 *                                      *
*                                      *                 *                                      *
****************************************                 ****************************************
```

MARTIN COUNTY FLOOD CONTROL STUDY   JOB NO. 06901-001-036
HDR ENGINEERING, INC.   AUSTIN, TEXAS

ACKERLY AREA MODEL TO HWY 846 PLAYAS

COMPUTING 2-YR, 5-YR, 10-YR, 25-YR, 50-YR, AND 100-YR FLOOD EVENTS
FOR ACKERLY/KNOTT AREA USING PLAN OPTION IN HEC-1.

PLAN 1: 2-YEAR EVENT
PLAN 2: 5-YEAR EVENT
PLAN 3: 10-YEAR EVENT
PLAN 4: 25-YEAR EVENT
PLAN 5: 50-YEAR EVENT
PLAN 6: 100-YEAR EVENT

```
 18 IO         OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE

    IT         HYDROGRAPH TIME DATA
                      NMIN          10  MINUTES IN COMPUTATION INTERVAL
                     IDATE      1    0  STARTING DATE
                     ITIME        0000  STARTING TIME
                        NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE      3    0  ENDING DATE
                    NDTIME        0150  ENDING TIME
                     ICENT          19  CENTURY MARK

                COMPUTATION INTERVAL     .17 HOURS
                     TOTAL TIME BASE   49.83 HOURS

        ENGLISH UNITS
            DRAINAGE AREA          SQUARE MILES
            PRECIPITATION DEPTH    INCHES
            LENGTH, ELEVATION      FEET
            FLOW                   CUBIC FEET PER SECOND
            STORAGE VOLUME         ACRE-FEET
            SURFACE AREA           ACRES
            TEMPERATURE            DEGREES FAHRENHEIT
```

```
JP          MULTI-PLAN OPTION
                  NPLAN            6  NUMBER OF PLANS

JR          MULTI-RATIO OPTION
                RATIOS OF RUNOFF
              1.00
```

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO FLOWS RATIO 1 1.00
HYDROGRAPH AT	TRIPLY	3.74	1	FLOW	350.
				TIME	13.17
			2	FLOW	1021.
				TIME	13.17
			3	FLOW	1521.
				TIME	13.17
			4	FLOW	2075.
				TIME	13.17
			5	FLOW	2610.
				TIME	13.00
			6	FLOW	3149.
				TIME	13.00
ROUTED TO	PLAYA1	3.74	1	FLOW	0.
				TIME	.17
			2	FLOW	0.
				TIME	.17
			3	FLOW	0.
				TIME	.17
			4	FLOW	0.
				TIME	.17
			5	FLOW	0.
				TIME	.17
			6	FLOW	0.
				TIME	.17
			** PEAK STAGES IN FEET **		
			1	STAGE	2786.26
				TIME	27.50
			2	STAGE	2788.97
				TIME	27.83
			3	STAGE	2790.28
				TIME	27.50
			4	STAGE	2790.85
				TIME	27.33
			5	STAGE	2791.49
				TIME	28.33
			6	STAGE	2792.15
				TIME	27.67
ROUTED TO	RT01	3.74	1	FLOW	0.
				TIME	.17
			2	FLOW	0.
				TIME	.17
			3	FLOW	0.
				TIME	.17
			4	FLOW	0.
				TIME	.17
			5	FLOW	0.

				TIME	.17
			6	FLOW	0.
				TIME	.17
HYDROGRAPH AT	ACK-A	.25	1	FLOW	53.
				TIME	12.33
			2	FLOW	148.
				TIME	12.33
			3	FLOW	218.
				TIME	12.33
			4	FLOW	294.
				TIME	12.33
			5	FLOW	365.
				TIME	12.33
			6	FLOW	437.
				TIME	12.33
2 COMBINED AT	2002-A	3.99	1	FLOW	53.
				TIME	12.33
			2	FLOW	148.
				TIME	12.33
			3	FLOW	218.
				TIME	12.33
			4	FLOW	294.
				TIME	12.33
			5	FLOW	365.
				TIME	12.33
			6	FLOW	437.
				TIME	12.33
ROUTED TO	RT02	3.99	1	FLOW	49.
				TIME	12.67
			2	FLOW	140.
				TIME	12.50
			3	FLOW	216.
				TIME	12.50
			4	FLOW	293.
				TIME	12.50
			5	FLOW	357.
				TIME	12.50
			6	FLOW	421.
				TIME	12.50
HYDROGRAPH AT	A-1	.74	1	FLOW	130.
				TIME	12.50
			2	FLOW	363.
				TIME	12.50
			3	FLOW	530.
				TIME	12.50
			4	FLOW	716.
				TIME	12.50
			5	FLOW	902.
				TIME	12.50
			6	FLOW	1074.
				TIME	12.33
2 COMBINED AT	DAVENP	4.73	1	FLOW	167.
				TIME	12.50
			2	FLOW	504.
				TIME	12.50

			3	FLOW	746.
				TIME	12.50
			4	FLOW	1009.
				TIME	12.50
			5	FLOW	1258.
				TIME	12.50
			6	FLOW	1492.
				TIME	12.50
ROUTED TO	RT03	4.73	1	FLOW	159.
				TIME	12.83
			2	FLOW	495.
				TIME	12.67
			3	FLOW	716.
				TIME	12.67
			4	FLOW	957.
				TIME	12.50
			5	FLOW	1203.
				TIME	12.50
			6	FLOW	1459.
				TIME	12.50
HYDROGRAPH AT	B-1	.43	1	FLOW	77.
				TIME	12.50
			2	FLOW	213.
				TIME	12.50
			3	FLOW	319.
				TIME	12.33
			4	FLOW	434.
				TIME	12.33
			5	FLOW	539.
				TIME	12.33
			6	FLOW	652.
				TIME	12.33
2 COMBINED AT	B-1OUT	5.16	1	FLOW	213.
				TIME	12.67
			2	FLOW	659.
				TIME	12.67
			3	FLOW	997.
				TIME	12.50
			4	FLOW	1374.
				TIME	12.50
			5	FLOW	1729.
				TIME	12.50
			6	FLOW	2082.
				TIME	12.50
ROUTED TO	RT08	5.16	1	FLOW	205.
				TIME	12.83
			2	FLOW	637.
				TIME	12.67
			3	FLOW	984.
				TIME	12.67
			4	FLOW	1340.
				TIME	12.67
			5	FLOW	1673.
				TIME	12.67
			6	FLOW	1990.
				TIME	12.67

HYDROGRAPH AT	ACK-B	1.33	1	FLOW	211.
				TIME	12.50
			2	FLOW	613.
				TIME	12.50
			3	FLOW	908.
				TIME	12.50
			4	FLOW	1232.
				TIME	12.50
			5	FLOW	1548.
				TIME	12.50
			6	FLOW	1853.
				TIME	12.50
ROUTED TO	RT05	1.33	1	FLOW	204.
				TIME	12.83
			2	FLOW	605.
				TIME	12.67
			3	FLOW	887.
				TIME	12.67
			4	FLOW	1193.
				TIME	12.67
			5	FLOW	1494.
				TIME	12.67
			6	FLOW	1774.
				TIME	12.67
HYDROGRAPH AT	A-2	1.00	1	FLOW	180.
				TIME	12.50
			2	FLOW	515.
				TIME	12.33
			3	FLOW	777.
				TIME	12.33
			4	FLOW	1054.
				TIME	12.33
			5	FLOW	1308.
				TIME	12.33
			6	FLOW	1581.
				TIME	12.33
2 COMBINED AT	SNELL	2.33	1	FLOW	340.
				TIME	12.67
			2	FLOW	1006.
				TIME	12.50
			3	FLOW	1520.
				TIME	12.50
			4	FLOW	2077.
				TIME	12.50
			5	FLOW	2625.
				TIME	12.50
			6	FLOW	3152.
				TIME	12.50
ROUTED TO	RT06	2.33	1	FLOW	336.
				TIME	12.83
			2	FLOW	1000.
				TIME	12.67
			3	FLOW	1489.
				TIME	12.67
			4	FLOW	2017.

				TIME	12.67
			5	FLOW	2535.
				TIME	12.67
			6	FLOW	3017.
				TIME	12.67
HYDROGRAPH AT	B-2	1.00	1	FLOW	180.
				TIME	12.50
			2	FLOW	515.
				TIME	12.33
			3	FLOW	777.
				TIME	12.33
			4	FLOW	1054.
				TIME	12.33
			5	FLOW	1308.
				TIME	12.33
			6	FLOW	1581.
				TIME	12.33
HYDROGRAPH AT	ACKRLY	.68	1	FLOW	110.
				TIME	12.50
			2	FLOW	318.
				TIME	12.50
			3	FLOW	469.
				TIME	12.50
			4	FLOW	636.
				TIME	12.50
			5	FLOW	799.
				TIME	12.50
			6	FLOW	956.
				TIME	12.50
ROUTED TO	RT04	.68	1	FLOW	107.
				TIME	12.83
			2	FLOW	308.
				TIME	12.67
			3	FLOW	466.
				TIME	12.67
			4	FLOW	634.
				TIME	12.67
			5	FLOW	792.
				TIME	12.67
			6	FLOW	940.
				TIME	12.67
HYDROGRAPH AT	A-3	.92	1	FLOW	124.
				TIME	12.67
			2	FLOW	361.
				TIME	12.67
			3	FLOW	534.
				TIME	12.67
			4	FLOW	726.
				TIME	12.67
			5	FLOW	916.
				TIME	12.67
			6	FLOW	1095.
				TIME	12.67
2 COMBINED AT	JEFFCT	1.60	1	FLOW	227.
				TIME	12.83

			2	FLOW	669.
				TIME	12.67
			3	FLOW	1000.
				TIME	12.67
			4	FLOW	1360.
				TIME	12.67
			5	FLOW	1708.
				TIME	12.67
			6	FLOW	2035.
				TIME	12.67
3 COMBINED AT	ACKWST	4.93	1	FLOW	662.
				TIME	12.83
			2	FLOW	2037.
				TIME	12.67
			3	FLOW	3008.
				TIME	12.67
			4	FLOW	4075.
				TIME	12.67
			5	FLOW	5138.
				TIME	12.50
			6	FLOW	6240.
				TIME	12.50
2 COMBINED AT	MAHONY	10.09	1	FLOW	867.
				TIME	12.83
			2	FLOW	2674.
				TIME	12.67
			3	FLOW	3992.
				TIME	12.67
			4	FLOW	5414.
				TIME	12.67
			5	FLOW	6799.
				TIME	12.67
			6	FLOW	8072.
				TIME	12.67
ROUTED TO	RT07	10.09	1	FLOW	856.
				TIME	13.00
			2	FLOW	2621.
				TIME	12.83
			3	FLOW	3823.
				TIME	12.83
			4	FLOW	5238.
				TIME	12.67
			5	FLOW	6677.
				TIME	12.67
			6	FLOW	8059.
				TIME	12.67
HYDROGRAPH AT	C-1B	.15	1	FLOW	12.
				TIME	13.33
			2	FLOW	36.
				TIME	13.33
			3	FLOW	54.
				TIME	13.33
			4	FLOW	74.
				TIME	13.33
			5	FLOW	92.
				TIME	13.33

			6	FLOW	112.
				TIME	13.33
HYDROGRAPH AT	C-2	1.00	1	FLOW	135.
				TIME	12.67
			2	FLOW	393.
				TIME	12.67
			3	FLOW	581.
				TIME	12.67
			4	FLOW	789.
				TIME	12.67
			5	FLOW	995.
				TIME	12.67
			6	FLOW	1190.
				TIME	12.67
HYDROGRAPH AT	B-3	1.00	1	FLOW	140.
				TIME	12.67
			2	FLOW	403.
				TIME	12.67
			3	FLOW	594.
				TIME	12.67
			4	FLOW	805.
				TIME	12.67
			5	FLOW	1016.
				TIME	12.67
			6	FLOW	1211.
				TIME	12.67
ROUTED TO	RT09	1.00	1	FLOW	138.
				TIME	13.17
			2	FLOW	397.
				TIME	13.00
			3	FLOW	587.
				TIME	13.00
			4	FLOW	793.
				TIME	13.00
			5	FLOW	991.
				TIME	12.83
			6	FLOW	1197.
				TIME	12.83
HYDROGRAPH AT	C-3	1.00	1	FLOW	153.
				TIME	12.50
			2	FLOW	448.
				TIME	12.50
			3	FLOW	666.
				TIME	12.50
			4	FLOW	904.
				TIME	12.50
			5	FLOW	1137.
				TIME	12.50
			6	FLOW	1363.
				TIME	12.50
ROUTED TO	RT10	1.00	1	FLOW	152.
				TIME	12.83
			2	FLOW	428.
				TIME	12.83
			3	FLOW	646.

				TIME	12.67
			4	FLOW	885.
				TIME	12.67
			5	FLOW	1119.
				TIME	12.67
			6	FLOW	1346.
				TIME	12.67
4 COMBINED AT	ZANT	3.15	1	FLOW	353.
				TIME	13.00
			2	FLOW	1152.
				TIME	12.83
			3	FLOW	1746.
				TIME	12.83
			4	FLOW	2378.
				TIME	12.83
			5	FLOW	2989.
				TIME	12.83
			6	FLOW	3573.
				TIME	12.67
2 COMBINED AT	ZNTOUT	13.24	1	FLOW	1209.
				TIME	13.00
			2	FLOW	3772.
				TIME	12.83
			3	FLOW	5569.
				TIME	12.83
			4	FLOW	7511.
				TIME	12.67
			5	FLOW	9605.
				TIME	12.67
			6	FLOW	11632.
				TIME	12.67
ROUTED TO	RT11	13.24	1	FLOW	1185.
				TIME	13.17
			2	FLOW	3612.
				TIME	13.00
			3	FLOW	5461.
				TIME	12.83
			4	FLOW	7503.
				TIME	12.83
			5	FLOW	9453.
				TIME	12.83
			6	FLOW	11250.
				TIME	12.83
HYDROGRAPH AT	COX	1.00	1	FLOW	137.
				TIME	12.67
			2	FLOW	396.
				TIME	12.67
			3	FLOW	585.
				TIME	12.67
			4	FLOW	795.
				TIME	12.67
			5	FLOW	1002.
				TIME	12.67
			6	FLOW	1197.
				TIME	12.67

2 COMBINED AT	COXOUT	14.24	1	FLOW	1271.
				TIME	13.17
			2	FLOW	3902.
				TIME	13.00
			3	FLOW	5987.
				TIME	12.83
			4	FLOW	8214.
				TIME	12.83
			5	FLOW	10342.
				TIME	12.83
			6	FLOW	12304.
				TIME	12.83
ROUTED TO	RT12	14.24	1	FLOW	1221.
				TIME	13.33
			2	FLOW	3886.
				TIME	13.00
			3	FLOW	5764.
				TIME	13.00
			4	FLOW	7937.
				TIME	12.83
			5	FLOW	10138.
				TIME	12.83
			6	FLOW	12219.
				TIME	12.83
HYDROGRAPH AT	PHILIP	1.00	1	FLOW	171.
				TIME	12.50
			2	FLOW	483.
				TIME	12.50
			3	FLOW	709.
				TIME	12.50
			4	FLOW	958.
				TIME	12.50
			5	FLOW	1205.
				TIME	12.50
			6	FLOW	1436.
				TIME	12.50
ROUTED TO	PHILPL	1.00	1	FLOW	159.
				TIME	12.67
			2	FLOW	458.
				TIME	12.50
			3	FLOW	712.
				TIME	12.50
			4	FLOW	975.
				TIME	12.50
			5	FLOW	1211.
				TIME	12.50
			6	FLOW	1450.
				TIME	12.50
			** PEAK STAGES IN FEET **		
			1	STAGE	2660.05
				TIME	12.67
			2	STAGE	2660.10
				TIME	12.50
			3	STAGE	2660.14
				TIME	12.50
			4	STAGE	2660.17

				TIME	12.50
			5	STAGE	2660.20
				TIME	12.50
			6	STAGE	2660.22
				TIME	12.50
ROUTED TO	RT13	1.00	1	FLOW	151.
				TIME	12.83
			2	FLOW	451.
				TIME	12.67
			3	FLOW	668.
				TIME	12.67
			4	FLOW	903.
				TIME	12.67
			5	FLOW	1129.
				TIME	12.67
			6	FLOW	1355.
				TIME	12.50
HYDROGRAPH AT	SHORTE	.45	1	FLOW	87.
				TIME	12.33
			2	FLOW	249.
				TIME	12.33
			3	FLOW	373.
				TIME	12.33
			4	FLOW	504.
				TIME	12.33
			5	FLOW	624.
				TIME	12.33
			6	FLOW	752.
				TIME	12.33
3 COMBINED AT	PHLOUT	15.69	1	FLOW	1327.
				TIME	13.17
			2	FLOW	4271.
				TIME	13.00
			3	FLOW	6352.
				TIME	12.83
			4	FLOW	8871.
				TIME	12.83
			5	FLOW	11283.
				TIME	12.83
			6	FLOW	13565.
				TIME	12.83
ROUTED TO	RT14	15.69	1	FLOW	1320.
				TIME	13.33
			2	FLOW	4122.
				TIME	13.00
			3	FLOW	6324.
				TIME	13.00
			4	FLOW	8607.
				TIME	13.00
			5	FLOW	10930.
				TIME	12.83
			6	FLOW	13321.
				TIME	12.83
HYDROGRAPH AT	B-4	1.17	1	FLOW	88.
				TIME	13.67

			2	FLOW	257.
				TIME	13.50
			3	FLOW	387.
				TIME	13.50
			4	FLOW	530.
				TIME	13.50
			5	FLOW	660.
				TIME	13.50
			6	FLOW	799.
				TIME	13.50
ROUTED TO	RT15	1.17	1	FLOW	88.
				TIME	13.83
			2	FLOW	256.
				TIME	13.67
			3	FLOW	385.
				TIME	13.67
			4	FLOW	526.
				TIME	13.50
			5	FLOW	659.
				TIME	13.50
			6	FLOW	798.
				TIME	13.50
HYDROGRAPH AT	C-4	.97	1	FLOW	172.
				TIME	12.50
			2	FLOW	478.
				TIME	12.50
			3	FLOW	702.
				TIME	12.33
			4	FLOW	956.
				TIME	12.33
			5	FLOW	1189.
				TIME	12.33
			6	FLOW	1441.
				TIME	12.33
2 COMBINED AT	C-4OUT	2.14	1	FLOW	173.
				TIME	12.50
			2	FLOW	512.
				TIME	12.50
			3	FLOW	778.
				TIME	12.50
			4	FLOW	1061.
				TIME	12.50
			5	FLOW	1360.
				TIME	12.50
			6	FLOW	1643.
				TIME	12.50
ROUTED TO	RT16	2.14	1	FLOW	157.
				TIME	13.33
			2	FLOW	498.
				TIME	13.00
			3	FLOW	769.
				TIME	13.00
			4	FLOW	1026.
				TIME	13.00
			5	FLOW	1318.
				TIME	12.83

			6	FLOW	1619.
				TIME	12.83
HYDROGRAPH AT	D/E-3	1.36	1	FLOW	168.
				TIME	12.83
			2	FLOW	482.
				TIME	12.83
			3	FLOW	709.
				TIME	12.67
			4	FLOW	969.
				TIME	12.67
			5	FLOW	1225.
				TIME	12.67
			6	FLOW	1475.
				TIME	12.67
HYDROGRAPH AT	D/E-4	2.65	1	FLOW	237.
				TIME	13.33
			2	FLOW	697.
				TIME	13.17
			3	FLOW	1043.
				TIME	13.17
			4	FLOW	1425.
				TIME	13.17
			5	FLOW	1784.
				TIME	13.17
			6	FLOW	2149.
				TIME	13.17
3 COMBINED AT	DE3OUT	6.15	1	FLOW	501.
				TIME	13.33
			2	FLOW	1595.
				TIME	13.00
			3	FLOW	2405.
				TIME	13.00
			4	FLOW	3260.
				TIME	13.00
			5	FLOW	4108.
				TIME	12.83
			6	FLOW	4988.
				TIME	12.83
ROUTED TO	RT17	6.15	1	FLOW	473.
				TIME	13.67
			2	FLOW	1578.
				TIME	13.33
			3	FLOW	2338.
				TIME	13.33
			4	FLOW	3242.
				TIME	13.17
			5	FLOW	4097.
				TIME	13.17
			6	FLOW	4928.
				TIME	13.17
HYDROGRAPH AT	F-2	1.00	1	FLOW	123.
				TIME	12.83
			2	FLOW	354.
				TIME	12.83
			3	FLOW	521.

				TIME	12.67
			4	FLOW	712.
				TIME	12.67
			5	FLOW	901.
				TIME	12.67
			6	FLOW	1084.
				TIME	12.67
2 COMBINED AT	ROSEWD	7.15	1	FLOW	526.
				TIME	13.67
			2	FLOW	1784.
				TIME	13.33
			3	FLOW	2697.
				TIME	13.17
			4	FLOW	3752.
				TIME	13.17
			5	FLOW	4712.
				TIME	13.17
			6	FLOW	5663.
				TIME	13.17
ROUTED TO	ROSEPL	7.15	1	FLOW	514.
				TIME	13.83
			2	FLOW	1720.
				TIME	13.50
			3	FLOW	2693.
				TIME	13.33
			4	FLOW	3658.
				TIME	13.17
			5	FLOW	4715.
				TIME	13.17
			6	FLOW	5720.
				TIME	13.17
			** PEAK STAGES IN FEET **		
			1	STAGE	2640.11
				TIME	13.83
			2	STAGE	2640.26
				TIME	13.50
			3	STAGE	2640.34
				TIME	13.33
			4	STAGE	2640.42
				TIME	13.17
			5	STAGE	2640.51
				TIME	13.17
			6	STAGE	2640.57
				TIME	13.17
HYDROGRAPH AT	C-1A	.13	1	FLOW	10.
				TIME	13.50
			2	FLOW	31.
				TIME	13.33
			3	FLOW	46.
				TIME	13.33
			4	FLOW	63.
				TIME	13.33
			5	FLOW	79.
				TIME	13.33
			6	FLOW	95.
				TIME	13.33

ROUTED TO	RT18	.13	1	FLOW	10.
				TIME	13.83
			2	FLOW	30.
				TIME	13.67
			3	FLOW	46.
				TIME	13.50
			4	FLOW	63.
				TIME	13.50
			5	FLOW	79.
				TIME	13.50
			6	FLOW	95.
				TIME	13.50
HYDROGRAPH AT	D-1	.89	1	FLOW	142.
				TIME	12.50
			2	FLOW	410.
				TIME	12.50
			3	FLOW	608.
				TIME	12.50
			4	FLOW	824.
				TIME	12.50
			5	FLOW	1036.
				TIME	12.50
			6	FLOW	1240.
				TIME	12.50
2 COMBINED AT	D-1OUT	1.02	1	FLOW	142.
				TIME	12.50
			2	FLOW	411.
				TIME	12.50
			3	FLOW	613.
				TIME	12.50
			4	FLOW	834.
				TIME	12.50
			5	FLOW	1051.
				TIME	12.50
			6	FLOW	1262.
				TIME	12.50
ROUTED TO	RT19	1.02	1	FLOW	134.
				TIME	12.83
			2	FLOW	394.
				TIME	12.83
			3	FLOW	577.
				TIME	12.67
			4	FLOW	801.
				TIME	12.67
			5	FLOW	1021.
				TIME	12.67
			6	FLOW	1239.
				TIME	12.67
HYDROGRAPH AT	E-1A	.55	1	FLOW	49.
				TIME	13.33
			2	FLOW	145.
				TIME	13.17
			3	FLOW	216.
				TIME	13.17
			4	FLOW	296.

				TIME	13.17
			5	FLOW	370.
				TIME	13.17
			6	FLOW	446.
				TIME	13.17
2 COMBINED AT	E1AOUT	1.57	1	FLOW	178.
				TIME	13.00
			2	FLOW	515.
				TIME	12.83
			3	FLOW	758.
				TIME	12.83
			4	FLOW	1025.
				TIME	12.83
			5	FLOW	1291.
				TIME	12.83
			6	FLOW	1568.
				TIME	12.67
ROUTED TO	RT20	1.57	1	FLOW	177.
				TIME	13.17
			2	FLOW	508.
				TIME	13.00
			3	FLOW	746.
				TIME	13.00
			4	FLOW	1012.
				TIME	12.83
			5	FLOW	1288.
				TIME	12.83
			6	FLOW	1558.
				TIME	12.83
HYDROGRAPH AT	F-1	1.13	1	FLOW	152.
				TIME	12.67
			2	FLOW	444.
				TIME	12.67
			3	FLOW	656.
				TIME	12.67
			4	FLOW	892.
				TIME	12.67
			5	FLOW	1125.
				TIME	12.67
			6	FLOW	1345.
				TIME	12.67
2 COMBINED AT	SHAW	2.70	1	FLOW	275.
				TIME	13.17
			2	FLOW	867.
				TIME	12.83
			3	FLOW	1326.
				TIME	12.83
			4	FLOW	1819.
				TIME	12.83
			5	FLOW	2297.
				TIME	12.83
			6	FLOW	2756.
				TIME	12.83
3 COMBINED AT	SHWRSE	25.54	1	FLOW	1946.
				TIME	13.33

			2	FLOW	6182.
				TIME	13.17
			3	FLOW	9509.
				TIME	13.00
			4	FLOW	13366.
				TIME	13.00
			5	FLOW	16950.
				TIME	13.00
			6	FLOW	20476.
				TIME	13.00
ROUTED TO	RT21	25.54	1	FLOW	1918.
				TIME	13.50
			2	FLOW	6135.
				TIME	13.17
			3	FLOW	9454.
				TIME	13.17
			4	FLOW	13085.
				TIME	13.00
			5	FLOW	16796.
				TIME	13.00
			6	FLOW	20414.
				TIME	13.00
HYDROGRAPH AT	F-3/4	1.84	1	FLOW	176.
				TIME	13.17
			2	FLOW	510.
				TIME	13.17
			3	FLOW	764.
				TIME	13.00
			4	FLOW	1046.
				TIME	13.00
			5	FLOW	1318.
				TIME	13.00
			6	FLOW	1588.
				TIME	13.00
ROUTED TO	RTNICK	1.84	1	FLOW	175.
				TIME	13.33
			2	FLOW	510.
				TIME	13.17
			3	FLOW	762.
				TIME	13.17
			4	FLOW	1041.
				TIME	13.17
			5	FLOW	1305.
				TIME	13.17
			6	FLOW	1569.
				TIME	13.17
HYDROGRAPH AT	G-2	1.88	1	FLOW	267.
				TIME	12.67
			2	FLOW	764.
				TIME	12.67
			3	FLOW	1123.
				TIME	12.67
			4	FLOW	1522.
				TIME	12.67
			5	FLOW	1919.
				TIME	12.67

			6	FLOW	2287.
				TIME	12.67
2 COMBINED AT	NICHOL	3.72	1	FLOW	348.
				TIME	12.83
			2	FLOW	1064.
				TIME	12.83
			3	FLOW	1592.
				TIME	12.83
			4	FLOW	2183.
				TIME	12.83
			5	FLOW	2787.
				TIME	12.67
			6	FLOW	3372.
				TIME	12.67
2 COMBINED AT	NICHIN	29.26	1	FLOW	2183.
				TIME	13.50
			2	FLOW	7047.
				TIME	13.17
			3	FLOW	10806.
				TIME	13.17
			4	FLOW	15111.
				TIME	13.00
			5	FLOW	19307.
				TIME	13.00
			6	FLOW	23426.
				TIME	13.00
ROUTED TO	NICHPL	29.26	1	FLOW	1848.
				TIME	13.83
			2	FLOW	6347.
				TIME	13.50
			3	FLOW	10142.
				TIME	13.33
			4	FLOW	14181.
				TIME	13.17
			5	FLOW	18309.
				TIME	13.17
			6	FLOW	22381.
				TIME	13.17
			** PEAK STAGES IN FEET **		
			1	STAGE	2615.66
				TIME	13.83
			2	STAGE	2616.52
				TIME	13.50
			3	STAGE	2617.08
				TIME	13.33
			4	STAGE	2617.60
				TIME	13.17
			5	STAGE	2618.08
				TIME	13.17
			6	STAGE	2618.52
				TIME	13.17
ROUTED TO	RT22	29.26	1	FLOW	1830.
				TIME	14.00
			2	FLOW	6312.
				TIME	13.50

			3	FLOW	10009.
				TIME	13.33
			4	FLOW	14119.
				TIME	13.33
			5	FLOW	18054.
				TIME	13.17
			6	FLOW	22253.
				TIME	13.17
HYDROGRAPH AT	G-1A	.32	1	FLOW	56.
				TIME	12.50
			2	FLOW	157.
				TIME	12.50
			3	FLOW	229.
				TIME	12.50
			4	FLOW	310.
				TIME	12.50
			5	FLOW	390.
				TIME	12.50
			6	FLOW	464.
				TIME	12.33
HYDROGRAPH AT	G-1B	.58	1	FLOW	103.
				TIME	12.50
			2	FLOW	287.
				TIME	12.50
			3	FLOW	430.
				TIME	12.33
			4	FLOW	585.
				TIME	12.33
			5	FLOW	726.
				TIME	12.33
			6	FLOW	880.
				TIME	12.33
2 COMBINED AT	G-1	.90	1	FLOW	159.
				TIME	12.50
			2	FLOW	444.
				TIME	12.50
			3	FLOW	656.
				TIME	12.33
			4	FLOW	892.
				TIME	12.33
			5	FLOW	1109.
				TIME	12.33
			6	FLOW	1344.
				TIME	12.33
ROUTED TO	RT23	.90	1	FLOW	155.
				TIME	12.67
			2	FLOW	434.
				TIME	12.50
			3	FLOW	652.
				TIME	12.50
			4	FLOW	884.
				TIME	12.50
			5	FLOW	1105.
				TIME	12.50
			6	FLOW	1325.
				TIME	12.50

HYDROGRAPH AT	H-1B	1.01	1	FLOW	201.
				TIME	12.33
			2	FLOW	572.
				TIME	12.33
			3	FLOW	854.
				TIME	12.33
			4	FLOW	1153.
				TIME	12.33
			5	FLOW	1428.
				TIME	12.33
			6	FLOW	1717.
				TIME	12.33
3 COMBINED AT	CRD846	31.17	1	FLOW	1894.
				TIME	14.00
			2	FLOW	6464.
				TIME	13.50
			3	FLOW	10333.
				TIME	13.33
			4	FLOW	14536.
				TIME	13.33
			5	FLOW	18660.
				TIME	13.17
			6	FLOW	22994.
				TIME	13.17
ROUTED TO	RT24	31.17	1	FLOW	1891.
				TIME	14.00
			2	FLOW	6417.
				TIME	13.50
			3	FLOW	10226.
				TIME	13.33
			4	FLOW	14511.
				TIME	13.33
			5	FLOW	18476.
				TIME	13.17
			6	FLOW	22875.
				TIME	13.17
HYDROGRAPH AT	H-1A	.13	1	FLOW	28.
				TIME	12.33
			2	FLOW	81.
				TIME	12.17
			3	FLOW	123.
				TIME	12.17
			4	FLOW	166.
				TIME	12.17
			5	FLOW	203.
				TIME	12.17
			6	FLOW	247.
				TIME	12.17
ROUTED TO	RT25	.13	1	FLOW	27.
				TIME	12.50
			2	FLOW	79.
				TIME	12.33
			3	FLOW	118.
				TIME	12.33
			4	FLOW	158.

				TIME	12.33
			5	FLOW	194.
				TIME	12.33
			6	FLOW	233.
				TIME	12.33
HYDROGRAPH AT	I-1B	.37	1	FLOW	66.
				TIME	12.50
			2	FLOW	186.
				TIME	12.33
			3	FLOW	281.
				TIME	12.33
			4	FLOW	382.
				TIME	12.33
			5	FLOW	473.
				TIME	12.33
			6	FLOW	573.
				TIME	12.33
HYDROGRAPH AT	I-1C	.60	1	FLOW	129.
				TIME	12.33
			2	FLOW	358.
				TIME	12.33
			3	FLOW	527.
				TIME	12.33
			4	FLOW	709.
				TIME	12.33
			5	FLOW	880.
				TIME	12.33
			6	FLOW	1052.
				TIME	12.33
4 COMBINED AT	846AIN	32.27	1	FLOW	1929.
				TIME	14.00
			2	FLOW	6480.
				TIME	13.50
			3	FLOW	10371.
				TIME	13.33
			4	FLOW	14693.
				TIME	13.33
			5	FLOW	18742.
				TIME	13.17
			6	FLOW	23211.
				TIME	13.17
ROUTED TO	846PLA	32.27	1	FLOW	1351.
				TIME	14.83
			2	FLOW	4883.
				TIME	14.17
			3	FLOW	8237.
				TIME	13.83
			4	FLOW	11997.
				TIME	13.67
			5	FLOW	15671.
				TIME	13.67
			6	FLOW	19796.
				TIME	13.50

** PEAK STAGES IN FEET **

1	STAGE	2580.82

				TIME	14.83
			2	STAGE	2581.93
				TIME	14.17
			3	STAGE	2582.73
				TIME	13.83
			4	STAGE	2583.51
				TIME	13.67
			5	STAGE	2584.19
				TIME	13.67
			6	STAGE	2584.91
				TIME	13.50
HYDROGRAPH AT	I-1B	.31	1	FLOW	66.
				TIME	12.33
			2	FLOW	192.
				TIME	12.17
			3	FLOW	293.
				TIME	12.17
			4	FLOW	397.
				TIME	12.17
			5	FLOW	483.
				TIME	12.17
			6	FLOW	589.
				TIME	12.17
2 COMBINED AT	846BIN	32.58	1	FLOW	1360.
				TIME	14.83
			2	FLOW	4904.
				TIME	14.17
			3	FLOW	8269.
				TIME	13.83
			4	FLOW	12030.
				TIME	13.67
			5	FLOW	15718.
				TIME	13.67
			6	FLOW	19861.
				TIME	13.50
ROUTED TO	846PLB	32.58	1	FLOW	1323.
				TIME	15.33
			2	FLOW	4797.
				TIME	14.33
			3	FLOW	8097.
				TIME	14.00
			4	FLOW	11829.
				TIME	13.83
			5	FLOW	15452.
				TIME	13.67
			6	FLOW	19574.
				TIME	13.67
			** PEAK STAGES IN FEET **		
			1	STAGE	2585.48
				TIME	15.33
			2	STAGE	2586.14
				TIME	14.33
			3	STAGE	2586.62
				TIME	14.00
			4	STAGE	2587.09
				TIME	13.83

			5	STAGE	2587.50
				TIME	13.67
			6	STAGE	2587.93
				TIME	13.67
HYDROGRAPH AT	J-1	.47	1	FLOW	101.
				TIME	12.33
			2	FLOW	280.
				TIME	12.33
			3	FLOW	413.
				TIME	12.33
			4	FLOW	556.
				TIME	12.33
			5	FLOW	689.
				TIME	12.33
			6	FLOW	824.
				TIME	12.33
2 COMBINED AT	846CIN	33.05	1	FLOW	1334.
				TIME	15.17
			2	FLOW	4828.
				TIME	14.33
			3	FLOW	8144.
				TIME	14.00
			4	FLOW	11878.
				TIME	13.83
			5	FLOW	15524.
				TIME	13.67
			6	FLOW	19671.
				TIME	13.67
ROUTED TO	846PLC	33.05	1	FLOW	1091.
				TIME	16.67
			2	FLOW	3907.
				TIME	15.00
			3	FLOW	6761.
				TIME	14.67
			4	FLOW	9938.
				TIME	14.33
			5	FLOW	13109.
				TIME	14.17
			6	FLOW	16643.
				TIME	14.17
			** PEAK STAGES IN FEET **		
			1	STAGE	2581.25
				TIME	16.67
			2	STAGE	2582.92
				TIME	15.00
			3	STAGE	2584.22
				TIME	14.67
			4	STAGE	2585.48
				TIME	14.33
			5	STAGE	2586.72
				TIME	14.17
			6	STAGE	2588.11
				TIME	14.17

*** NORMAL END OF HEC-1 ***
NORMAL END OF HEC-1

APPENDIX G

HEC1 S/N: 1090525070 HMVersion: 5.20 Data File: BROWN-EX.HC1

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             FEBRUARY 1981             *
*           REVISED 02 AUG 88           *
*                                       *
* RUN DATE  09/14/1990  TIME  09:37:30  *
*                                       *
*****************************************
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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
* THE HYDROLOGIC ENGINEERING CENTER     *
*         609 SECOND STREET             *
*      DAVIS, CALIFORNIA 95616          *
*                                       *
*                                       *
*****************************************
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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X               X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX         XXX
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:::::::::::::::::::::::::::::::::::::::::::
:::::::::::::::::::::::::::::::::::::::::::
:::                                     :::
:::  Full Microcomputer Implementation  :::
:::                 by                  :::
:::        Haestad Methods, Inc.        :::
:::                                     :::
:::::::::::::::::::::::::::::::::::::::::::
:::::::::::::::::::::::::::::::::::::::::::
```

37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

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ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

*DIAGRAM
ID    MARTIN COUNTY FLOOD CONTROL STUDY     JOB NO. 06901-001-036
ID    HDR ENGINEERING, INC.                 AUSTIN, TEXAS
ID
ID    BROWN AREA EXISTING CONDITIONS
ID
ID    COMPUTING 2-YR, 5-YR, 10-YR, 25-YR, 50-YR, AND 100-YR FLOOD EVENTS
ID    FOR BROWN AREA USING PLAN OPTION IN HEC-1.
ID
ID                PLAN 1:   2-YEAR EVENT
ID                PLAN 2:   5-YEAR EVENT
ID                PLAN 3:  10-YEAR EVENT
ID                PLAN 4:  25-YEAR EVENT
ID                PLAN 5:  50-YEAR EVENT
ID                PLAN 6: 100-YEAR EVENT
ID
ID
IT       5                 300
IO       5       0
JP       6

KK  BECKMY
KM    RUNOFF HYDROGRAPH FOR BECKMEYER SUBBASIN
KP       1
PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
BA    1.01
LS       0      72
UD    0.83
KP       2
PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
KP       3
PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
KP       4
PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
KP       5
PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
KP       6
PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

KK  BECKPL
KM    ROUTE BECKMEYER RUNOFF HYDROGRAPH THROUGH BECKMEYER PLAYA
RS       1    ELEV    2760
SV       0     154     438
SE    2755    2760    2765
SS    2760     500     2.6     1.5

KK    RT01
KM    ROUTE BECKMEYER PLAYA OUTFLOW HYDROGRAPH TO MULLINS PLAYA
RK    4500   .0044   0.030            TRAP       30       4
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ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

KK  MULLIN
KM    RUNOFF HYDROGRAPH FOR MULLINS SUBBASIN
PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
BA    1.94
LS       0      72
UD    1.20
KP       2
PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
KP       3
PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
KP       4
PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
KP       5
PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
KP       6
PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

KK  MULLIN
KM    COMBINE RT01 WITH MULLINS HYDROGRAPH TO GIVE INFLOW TO MULLINS PLAYA
HC       2

KK  MULLPL
KM    ROUTE MULLIN INFLOW HYDROGRAPH THROUGH MULLINS PLAYA
RS       1    ELEV    2740
SV       0     111     276
SE    2735    2740    2745
SS    2740     500     2.6     1.5

KK    RT02
KM    ROUTE MULLPL TO COOK OUTLET
RK    4000   .0062   0.030            TRAP      30       4

KK    COOK
KM    RUNOFF HYDROGRAPH FOR COOK SUBBASIN
PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
BA    0.84
LS       0      72
UD    0.97
KP       2
PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
KP       3
PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
KP       4
PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
KP       5
PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
KP       6
PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  90          KK   CKOUT
  91          KM    COMBINE RT02 WITH COOK HYDROGRAPH TO GIVE TOTAL HYDROGRAPH AT COOK OUTLET
  92          HC       2

  93          KK    RT03
  94          KM    ROUTE COOK OUTFLOW HYDROGRAPH TO BOND LAKE
  95          RK    4000   .0037   0.030           TRAP      30       4

  96          KK    BOND
  97          KM    RUNOFF HYDROGRAPH FOR BOND LAKE SUBBBASIN
  98          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
  99          BA    0.74
 100          LS       0      72
 101          UD    1.00
 102          KP       2
 103          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 104          KP       3
 105          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 106          KP       4
 107          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 108          KP       5
 109          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 110          KP       6
 111          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 112          KK  BONDIN
 113          KM    COMBINE RT03 WITH BOND HYDROGRAPH TO GIVE INFLOW HYDROGRAPH TO BOND LAKE
 114          HC       2

 115          KK  BONDLK
 116          KM    ROUTE BOND LAKE INFLOW HYDROGRAPH THROUGH BOND LAKE
 117          RS       1    ELEV    2700
 118          SV       0     342
 119          SE    2700    2705
 120          SS    2700     500     2.6     1.5

 121          KK    RT04
 122          KM    ROUTE BOND LAKE OUTFLOW HYDROGRAPH TO LANGHAM PLAYA
 123          RK    5500   .0027   0.030           TRAP      30       4

 124          KK      B5
 125          KM    RUNOFF HYDROGRAPH FOR B5 SUBBASIN
 126          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 127          BA    2.00
 128          LS       0      72
 129          UD    2.40
 130          KP       2
 131          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 132          KP       3
 133          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 134          KP       4
 135          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 136          KP       5
 137          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
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ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

KP       6
PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

KK    RT06
KM    ROUTE B5 RUNOFF HYDROGRAPH TO LANGHAM PLAYA
RK    5000   .0060   0.030            TRAP       5       1

KK      B6
KM    RUNOFF HYDROGRAPH FOR B6 SUBBASIN
PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
BA    1.16
LS       0      72
UD    1.15
KP       2
PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
KP       3
PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
KP       4
PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
KP       5
PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
KP       6
PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

KK  LANGHM
KM    COMBINE RT06 AND B6 HYDROGRAPHS TO GIVE LANGHAM SUBBASIN RUNOFF HYDROGRAPH
HC       2

KK  LANGIN
KM    COMBINE LANGHM AND RT04 HYDROGRAPH TO GIVE INFLOW HYDROGRAPH TO LANGHAM LAKE
HC       2

KK  LANGPL
KM    ROUTE LANGHAM PLAYA INFLOW HYDROGRAPH THROUGH LANGHAM PLAYA
RS       1    ELEV    2675
SV       0     114     228
SE    2670    2675    2680
SS    2675     500     2.6     1.5

KK  DRYWLS
KM    RUNOFF HYDROGRAPH FOR DRY WELLS SUBBASIN
PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
BA    0.73
LS       0      72
UD    1.06
KP       2
PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
KP       3
PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
KP       4
PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
KP       5
PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
KP       6
PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9
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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


 187            KK   DRYIN
 188            KM    COMBINE LANGHAM PLAYA OUTFLOW HYDROGRAPH WITH DRY WELLS RUNOFF HYDROGRAPH
 189            KM    TO GIVE INFLOW HYDROGRAPH TO DRY WELLS PLAYA
 190            HC       2

 191            KK  DRYWPL
 192            KM    ROUTE DRY WELLS PLAYA INFLOW HYDROGRAPH THROUG DRY WELLS PLAYA
 193            RS       1    ELEV    2670
 194            SV       0      68     208     485     970
 195            SE    2755    2760    2765    2770    2775
 196            SS    2770    1000     2.6     1.5

 197            KK   DAVIS
 198            KM    RUNOFF HYDROGRAPH FOR DAVIS SUBBASIN
 199            PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 200            BA    1.34
 201            LS       0      72
 202            UD    1.85
 203            KP       2
 204            PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 205            KP       3
 206            PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 207            KP       4
 208            PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 209            KP       5
 210            PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 211            KP       6
 212            PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 213            KK  DAVPLY
 214            KM    ROUTE DAVIS RUNOFF HYDROGRAPH THROUGH DAVIS PLAYA
 215            RS       1    ELEV    2760
 216            SV       0      68     208     485
 217            SE    2755    2760    2765    2770
 218            SS    2760     500     2.6     1.5

 219            KK    RT07
 220            KM    ROUTE DAVIS PLAYA OUTFLOW HYDROGRAPH TO HALE PLAYA
 221            RK    9300   .0060   0.030            TRAP      30       4

 222            KK  STAFFD
 223            KM    RUNOFF HYDROGRAPH FOR STAFFORD SUBBASIN
 224            PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 225            BA    0.57
 226            LS       0      72
 227            UD    0.96
 228            KP       2
 229            PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 230            KP       3
 231            PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 232            KP       4
 233            PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 234            KP       5
 235            PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 236          KP       6
 237          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 238          KK  STAFPL
 239          KM    ROUTE STAFFORD RUNOFF HYDROGRAPH THROUGH STAFFORD PLAYA
 240          RS       1    ELEV    2740
 241          SV       0      84     256
 242          SE    2740    2745    2750
 243          SS    2740     500     2.6     1.5

 244          KK    RT08
 245          KM    ROUTE STAFFORD PLAYA OUTFLOW HYDROGRAPH TO HALE PLAYA
 246          RK    5500   .0060   0.030            TRAP      30       4

 247          KK    HALE
 248          KM    RUNOFF HYDROGRAPH FOR HALE SUBBASIN
 249          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 250          BA    1.15
 251          LS       0      72
 252          UD    1.89
 253          KP       2
 254          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 255          KP       3
 256          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 257          KP       4
 258          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 259          KP       5
 260          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 261          KP       6
 262          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 263          KK  HALEIN
 264          KM    COMBINE HALE - RT07 - RT08 TO GIVE INFLOW HYDROGRAPH TO HALE PLAYA
 265          HC       3

 266          KK  HALEPL
 267          KM    ROUTE HALE INFLOW HYDROGRAPH THROUGH HALE PLAYA
 268          RS       1    ELEV    2700
 269          SV       0     114     386
 270          SE    2700    2705    2710
 271          SS    2700     500     2.6     1.5

 272          KK    RT09
 273          KM    ROUTE HALE PLAYA OUTFLOW HYDROGRAPH TO HWY 26 CROSSING
 274          RK    8000   .0056   0.030            TRAP       5       1

 275          KK    HUNT
 276          KM    RUNOFF HYDROGRAPH FOR HUNT SUBBASIN
 277          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 278          BA    0.93
 279          LS       0      72
 280          UD    1.38
 281          KP       2
 282          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 283          KP       3
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 284          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 285          KP       4
 286          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 287          KP       5
 288          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 289          KP       6
 290          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 291          KK   HWY26
 292          KM    COMBINE HYDROGRAPHS AT HWY 26 CROSSING
 293          HC       3

 294          KK    RT10
 295          KM    ROUTE HWY26 HYDROGRAPH TO MARILYN PLAYA
 296          RK    4000   .0037   0.030            TRAP      30       4

 297          KK  MARILN
 298          KM    RUNOFF HYDROGRAPH FOR MARILYN SUBBASIN
 299          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 300          BA    1.32
 301          LS       0      72
 302          UD    0.62
 303          KP       2
 304          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 305          KP       3
 306          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 307          KP       4
 308          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 309          KP       5
 310          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 311          KP       6
 312          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 313          KK   MRLIN
 314          KM    COMBINE RT10 WITH MARILN RUNOFF HYDROGRAPH TO GIVE INFLOW HYDROGRAPH INTO
 315          KM    MARILYN PLAYA
 316          HC       2

 317          KK  MRLNPL
 318          RS       1    ELEV    2640
 319          SV       0     122     602    1706
 320          SE    2635    2640    2645    2650
 321          SS    2640    1500     2.6     1.5

 322          KK    RT11
 323          KM    ROUTE MARILYN PLAYA OUTFLOW HYDORGRAPH TO COUNTY ROAD B1 CROSSING
 324          RK    7000   .0028   0.030            TRAP      30       4

 325          KK  ELLSBY
 326          KM    RUNOFF HYDROGRAPH FOR ELLSBERRY SUBBASIN
 327          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 328          BA    2.28
 329          LS       0      72
 330          UD    1.67
 331          KP       2
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 332          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 333          KP       3
 334          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 335          KP       4
 336          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 337          KP       5
 338          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 339          KP       6
 340          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 341          KK  ELLSIN
 342          KM    COMBINE ELLSBY RUNOFF HYDROGRAPH WITH RT11 TO GIVE HYDROGRAPH AT ELLSBERRY
 343          KM    PLAYA
 344          HC       2

 345          KK  ELLSPL
 346          KM    ROUTE ELLSBERRY INFLOW HYDROGRAPH THROUGH ELLSBERRY PLAYA
 347          RS       1    ELEV    2625
 348          SV       0     522    1044
 349          SE    2620    2625    2630
 350          SS    2625    1000     2.6     1.5

 351          KK    RT12
 352          KM    ROUTE COUNTY ROAD CROSSING HYDROGRAPH TO HUGHES PLAYA
 353          RK    8000   .0030   0.030            TRAP      30       4

 354          KK  HUGHES
 355          KM    RUNOFF HYDROGRAPH FOR HUGHES SUBBASIN
 356          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 357          BA    2.05
 358          LS       0      72
 359          UD    1.92
 360          KP       2
 361          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 362          KP       3
 363          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 364          KP       4
 365          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 366          KP       5
 367          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 368          KP       6
 369          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 370          KK  HUGHIN
 371          KM    COMBIE RT12 WITH HUGHES RUNOFF HYDROGRAPH TO GIVE INFLOW HYDROGRAPH INTO
 372          KM    HUGHES PLAYA
 373          HC       2

 374          KK  HUGHPL
 375          KM    ROUTE HUGHES PLAYA INFLOW HYDROGRAPH THROUGH HUGHES PLAYA
 376          RS       1    ELEV    2590
 377          SV       0     106     480    1328
 378          SE    2590    2595    2600    2605
 379          SS    2590     500     2.6     1.5
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LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 380           KK    RT13
 381           KM    ROUTE HUGHES PLAYA OUTFLOW HYDROGRAPH TO HWY 846 CROSSING
 382           RK    5500   .0030   0.030            TRAP      20       4

 383           KK  SH846B
 384           KM    RUNOFF HYDROGRAPH FOR S.H. 846 B SUBBASIN
 385           PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 386           BA    0.47
 387           LS       0      72
 388           UD    0.92
 389           KP       2
 390           PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 391           KP       3
 392           PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 393           KP       4
 394           PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 395           KP       5
 396           PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 397           KP       6
 398           PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 399           KK  SH846X
 400           KM    COMBINE RT13 WITH SH846B RUNOFF HYDROGRAPH TO GIVE HYDROGRAPH AT
 401           KM    S.H. 846 CROSSING WEST OF BATJER PLAYA
 402           HC       2

 403           KK  CURRIE
 404           KM    RUNOFF HYDROGRAPH FOR CURRIE SUBBASIN
 405           PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 406           BA    2.54
 407           LS       0      72
 408           UD    3.03
 409           KP       2
 410           PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 411           KP       3
 412           PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 413           KP       4
 414           PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 415           KP       5
 416           PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 417           KP       6
 418           PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 419           KK    RT14
 420           KM    ROUTE CURRIE RUNOFF HYDROGRAPH TO BLAGRAVE PLAYA
 421           RK    8000   .0038   0.030            TRAP      30       4

 422           KK  BLGRAV
 423           KM    RUNOFF HYDROGRAPH FOR BLAGRAVE SUBBASIN
 424           PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 425           BA    1.90
 426           LS       0      72
 427           UD    1.83
 428           KP       2
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 429         PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 430         KP       3
 431         PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 432         KP       4
 433         PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 434         KP       5
 435         PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 436         KP       6
 437         PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 438         KK   BLGIN
 439         KM    COMBINE RT14 HYDROGRAPH WITH BLGRAV HYDROGRAPH TO GIVE INFLOW HYDROGRAPH
 440         KM    FOR BLAGRAVE PLAYA
 441         HC       2

 442         KK  BLGRPL
 443         KM    ROUTE BLAGRAVE PLAYA INFLOW HYDROGRAPH THROUGH BLAGRAVE PLAYA
 444         RS       1    ELEV    2635
 445         SV       0      76     347
 446         SE    2630    2635    2640
 447         SS    2635     500     2.6     1.5

 448         KK    RT15
 449         KM    ROUTE BLAGRAVE PLAYA OUTFLOW HYDROGRAPH TO RAYLONG PLAYAS
 450         RK   14000   .0028   0.030            TRAP      30       4

 451         KK  WRIGHT
 452         KM    RUNOFF HYDROGRAPH FOR WRIGHT SUBBASIN
 453         PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 454         BA    0.73
 455         LS       0      72
 456         UD    0.67
 457         KP       2
 458         PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 459         KP       3
 460         PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 461         KP       4
 462         PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 463         KP       5
 464         PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 465         KP       6
 466         PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 467         KK  WRGHTP
 468         KM    ROUTE WRIGHT RUNOFF HYDROGRAPH THROUGH WRIGHT PLAYA
 469         RS       1    ELEV    2625
 470         SV       0      10      72     322     572
 471         SE    2613    2615    2620    2625    2630
 472         SS    2625     500     2.6     1.5
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 473          KK    RT16
 474          KM    ROUTE WRIGHT PLAYA OUTFLOW HYDROGRAPH TO RAYLONG PLAYAS
 475          RK    6000   .0050   0.030            TRAP      20       4

 476          KK     B18
 477          KM    RUNOFF HYDROGRAPH FOR B18 SUBBASIN
 478          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 479          BA    1.95
 480          LS       0      72
 481          UD    1.95
 482          KP       2
 483          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 484          KP       3
 485          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 486          KP       4
 487          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 488          KP       5
 489          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 490          KP       6
 491          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 492          KK     B19
 493          KM    RUNOFF HYDROGRAPH FOR B19 SUBBASIN
 494          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 495          BA    1.60
 496          LS       0      72
 497          UD    1.04
 498          KP       2
 499          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 500          KP       3
 501          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 502          KP       4
 503          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 504          KP       5
 505          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 506          KP       6
 507          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 508          KK  RAYLNG
 509          KM    COMBINE B18 - B19 - RT15 - RT16 TO GIVE INFLOW HYDROGRAPH TO RAYLONG PLAYAS
 510          HC       4

 511          KK    RT17
 512          KM    ROUTE RAYLONG HYDROGRAPH TO S.H. 846
 513          RK    4000   .0038   0.030            TRAP      10       4

 514          KK  BATJER
 515          KM    RUNOFF HYDROGRAPH FOR BATJER SUBBASIN
 516          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 517          BA    0.91
 518          LS       0      72
 519          UD    1.00
 520          KP       2
 521          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
```

LINE	ID	1	2	3	4	5	6	7	8	9	10
522	KP	3									
523	PH	10	28.2	0.58	1.2	2.2	2.6	2.8	3.4	3.9	4.6
524	KP	4									
525	PH	4	28.2	0.67	1.4	2.6	3.1	3.3	3.8	4.7	5.3
526	KP	5									
527	PH	2	28.2	0.75	1.5	3.0	3.4	3.7	4.4	5.3	6.1
528	KP	6									
529	PH	1	28.2	0.82	1.7	3.3	3.8	4.2	5.1	5.9	6.9
530	KK	BTJOUT									
531	HC	2									
532	ZZ										

```
                 SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE     (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.     (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    20     BECKMY
               V
               V
    37     BECKPL
               V
               V
    43       RT01
               .
               .
    46         .          MULLIN
               .               .
               .               .
    62     MULLIN............
               V
               V
    65     MULLPL
               V
               V
    71       RT02
               .
               .
    74         .            COOK
               .               .
               .               .
    90      CKOUT............
               V
               V
    93       RT03
               .
               .
    96         .            BOND
               .               .
               .               .
   112     BONDIN............
               V
               V
   115     BONDLK
               V
               V
   121       RT04
               .
               .
   124         .              B5
               .               V
               .               V
   140         .            RT06
               .               .
               .               .
   143         .               .              B6
               .               .               .
               .               .               .
   159         .          LANGHM............
               .               .
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              .           .
162      LANGIN............
              V
              V
165      LANGPL
              .
              .
171           .        DRYWLS
              .           .
              .           .
187       DRYIN............
              V
              V
191      DRYWPL
              .
              .
197           .         DAVIS
              .           V
              .           V
213           .        DAVPLY
              .           V
              .           V
219           .          RT07
              .           .
              .           .
222           .           .          STAFFD
              .           .           V
              .           .           V
238           .           .          STAFPL
              .           .           V
              .           .           V
244           .           .            RT08
              .           .           .
              .           .           .
247           .           .           .           HALE
              .           .           .           .
              .           .           .           .
263           .        HALEIN........................
              .           V
              .           V
266           .        HALEPL
              .           V
              .           V
272           .          RT09
              .           .
              .           .
275           .           .            HUNT
              .           .           .
              .           .           .
291       HWY26........................
              V
              V
294        RT10
              .
              .
297           .        MARILN
              .           .
              .           .
313       MRLIN............
              V
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               V
 317     MRLNPL
               V
               V
 322       RT11
               .
               .
 325           .        ELLSBY
               .             .
               .             .
 341     ELLSIN...............
               V
               V
 345     ELLSPL
               V
               V
 351       RT12
               .
               .
 354           .        HUGHES
               .             .
               .             .
 370     HUGHIN...............
               V
               V
 374     HUGHPL
               V
               V
 380       RT13
               .
               .
 383           .        SH846B
               .             .
               .             .
 399     SH846X...............
               .
               .
 403           .        CURRIE
               .             V
               .             V
 419           .          RT14
               .             .
               .             .
 422           .             .       BLGRAV
               .             .            .
               .             .            .
 438           .         BLGIN...............
               .             V
               .             V
 442           .        BLGRPL
               .             V
               .             V
 448           .          RT15
               .             .
               .             .
 451           .             .       WRIGHT
               .             .            V
               .             .            V
 467           .             .       WRGHTP
               .             .            V
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473          .            .           V
             .            .        RT16
             .            .           .
             .            .           .
476          .            .           .         B18
             .            .           .           .
             .            .           .           .
492          .            .           .           .         B19
             .            .           .           .           .
             .            .           .           .           .
508          .      RAYLNG.....................................
             .            V
             .            V
511          .         RT17
             .            .
             .            .
514          .            .      BATJER
             .            .           .
             .            .           .
530          .      BTJOUT............
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(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

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HEC1 S/N: 1090525070       HMVersion: 5.20    Data File: BROWN-EX.HC1

*****************************************                          ****************************************
*                                       *                          *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                          *   U.S. ARMY CORPS OF ENGINEERS       *
*             FEBRUARY 1981             *                          * THE HYDROLOGIC ENGINEERING CENTER    *
*           REVISED 02 AUG 88           *                          *          609 SECOND STREET           *
*                                       *                          *       DAVIS, CALIFORNIA 95616        *
*  RUN DATE  09/14/1990  TIME  09:37:30 *                          *                                      *
*                                       *                          *                                      *
*****************************************                          ****************************************




                        MARTIN COUNTY FLOOD CONTROL STUDY      JOB NO. 06901-001-036
                        HDR ENGINEERING, INC.                  AUSTIN, TEXAS

                        BROWN AREA EXISTING CONDITIONS

                        COMPUTING 2-YR, 5-YR, 10-YR, 25-YR, 50-YR, AND 100-YR FLOOD EVENTS
                        FOR BROWN AREA USING PLAN OPTION IN HEC-1.

                                  PLAN 1:   2-YEAR EVENT
                                  PLAN 2:   5-YEAR EVENT
                                  PLAN 3:  10-YEAR EVENT
                                  PLAN 4:  25-YEAR EVENT
                                  PLAN 5:  50-YEAR EVENT
                                  PLAN 6: 100-YEAR EVENT


  18 IO           OUTPUT CONTROL VARIABLES
                       IPRNT          5  PRINT CONTROL
                       IPLOT          0  PLOT CONTROL
                       QSCAL         0.  HYDROGRAPH PLOT SCALE

    IT            HYDROGRAPH TIME DATA
                        NMIN          5  MINUTES IN COMPUTATION INTERVAL
                       IDATE      1   0  STARTING DATE
                       ITIME       0000  STARTING TIME
                          NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE      2   0  ENDING DATE
                      NDTIME       0055  ENDING TIME
                       ICENT         19  CENTURY MARK

                   COMPUTATION INTERVAL     .08 HOURS
                        TOTAL TIME BASE   24.92 HOURS

          ENGLISH UNITS
              DRAINAGE AREA          SQUARE MILES
              PRECIPITATION DEPTH    INCHES
              LENGTH, ELEVATION      FEET
              FLOW                   CUBIC FEET PER SECOND
              STORAGE VOLUME         ACRE-FEET
              SURFACE AREA           ACRES
              TEMPERATURE            DEGREES FAHRENHEIT
```

```
JP          MULTI-PLAN OPTION
                  NPLAN            6  NUMBER OF PLANS

JR          MULTI-RATIO OPTION
                RATIOS OF RUNOFF
               1.00
```

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO FLOWS RATIO 1 1.00
HYDROGRAPH AT	BECKMY	1.01	1	FLOW	106.
				TIME	13.08
			2	FLOW	308.
				TIME	13.00
			3	FLOW	459.
				TIME	13.00
			4	FLOW	625.
				TIME	13.00
			5	FLOW	786.
				TIME	12.92
			6	FLOW	946.
				TIME	12.92
ROUTED TO	BECKPL	1.01	1	FLOW	55.
				TIME	13.92
			2	FLOW	198.
				TIME	13.58
			3	FLOW	321.
				TIME	13.50
			4	FLOW	464.
				TIME	13.42
			5	FLOW	601.
				TIME	13.42
			6	FLOW	748.
				TIME	13.33
			** PEAK STAGES IN FEET **		
			1	STAGE	2760.12
				TIME	13.92
			2	STAGE	2760.28
				TIME	13.58
			3	STAGE	2760.39
				TIME	13.50
			4	STAGE	2760.50
				TIME	13.42
			5	STAGE	2760.60
				TIME	13.42
			6	STAGE	2760.69
				TIME	13.33
ROUTED TO	RT01	1.01	1	FLOW	54.
				TIME	14.25
			2	FLOW	198.
				TIME	13.83
			3	FLOW	320.
				TIME	13.67
			4	FLOW	464.
				TIME	13.58
			5	FLOW	600.

				TIME	13.50
			6	FLOW	747.
				TIME	13.50
HYDROGRAPH AT	MULLIN	1.94	1	FLOW	157.
				TIME	13.50
			2	FLOW	457.
				TIME	13.42
			3	FLOW	686.
				TIME	13.42
			4	FLOW	937.
				TIME	13.42
			5	FLOW	1174.
				TIME	13.33
			6	FLOW	1420.
				TIME	13.33
2 COMBINED AT	MULLIN	2.95	1	FLOW	198.
				TIME	13.67
			2	FLOW	633.
				TIME	13.58
			3	FLOW	986.
				TIME	13.50
			4	FLOW	1384.
				TIME	13.50
			5	FLOW	1757.
				TIME	13.42
			6	FLOW	2153.
				TIME	13.42
ROUTED TO	MULLPL	2.95	1	FLOW	172.
				TIME	14.17
			2	FLOW	587.
				TIME	13.83
			3	FLOW	935.
				TIME	13.75
			4	FLOW	1321.
				TIME	13.75
			5	FLOW	1686.
				TIME	13.67
			6	FLOW	2081.
				TIME	13.58
			** PEAK STAGES IN FEET **		
			1	STAGE	2740.26
				TIME	14.17
			2	STAGE	2740.59
				TIME	13.83
			3	STAGE	2740.80
				TIME	13.75
			4	STAGE	2741.01
				TIME	13.75
			5	STAGE	2741.19
				TIME	13.67
			6	STAGE	2741.36
				TIME	13.58
ROUTED TO	RT02	2.95	1	FLOW	172.
				TIME	14.33
			2	FLOW	587.

				TIME	14.00
			3	FLOW	933.
				TIME	13.92
			4	FLOW	1321.
				TIME	13.83
			5	FLOW	1686.
				TIME	13.75
			6	FLOW	2080.
				TIME	13.67
HYDROGRAPH AT	COOK	.84	1	FLOW	79.
				TIME	13.25
			2	FLOW	230.
				TIME	13.17
			3	FLOW	344.
				TIME	13.17
			4	FLOW	469.
				TIME	13.08
			5	FLOW	590.
				TIME	13.08
			6	FLOW	712.
				TIME	13.08
2 COMBINED AT	CKOUT	3.79	1	FLOW	212.
				TIME	14.25
			2	FLOW	720.
				TIME	13.83
			3	FLOW	1158.
				TIME	13.75
			4	FLOW	1645.
				TIME	13.67
			5	FLOW	2109.
				TIME	13.58
			6	FLOW	2614.
				TIME	13.58
ROUTED TO	RT03	3.79	1	FLOW	212.
				TIME	14.50
			2	FLOW	720.
				TIME	14.00
			3	FLOW	1156.
				TIME	13.92
			4	FLOW	1641.
				TIME	13.75
			5	FLOW	2107.
				TIME	13.67
			6	FLOW	2613.
				TIME	13.67
HYDROGRAPH AT	BOND	.74	1	FLOW	68.
				TIME	13.25
			2	FLOW	199.
				TIME	13.17
			3	FLOW	297.
				TIME	13.17
			4	FLOW	406.
				TIME	13.17
			5	FLOW	509.
				TIME	13.17
			6	FLOW	613.

				TIME	13.17
2 COMBINED AT	BONDIN	4.53	1	FLOW	247.
				TIME	14.42
			2	FLOW	838.
				TIME	13.92
			3	FLOW	1357.
				TIME	13.75
			4	FLOW	1938.
				TIME	13.67
			5	FLOW	2493.
				TIME	13.58
			6	FLOW	3097.
				TIME	13.58
ROUTED TO	BONDLK	4.53	1	FLOW	202.
				TIME	15.42
			2	FLOW	703.
				TIME	14.50
			3	FLOW	1173.
				TIME	14.33
			4	FLOW	1700.
				TIME	14.17
			5	FLOW	2217.
				TIME	14.00
			6	FLOW	2792.
				TIME	14.00
			** PEAK STAGES IN FEET **		
			1	STAGE	2700.29
				TIME	15.42
			2	STAGE	2700.66
				TIME	14.50
			3	STAGE	2700.93
				TIME	14.33
			4	STAGE	2701.19
				TIME	14.17
			5	STAGE	2701.42
				TIME	14.00
			6	STAGE	2701.66
				TIME	14.00
ROUTED TO	RT04	4.53	1	FLOW	202.
				TIME	15.75
			2	FLOW	702.
				TIME	14.67
			3	FLOW	1173.
				TIME	14.50
			4	FLOW	1699.
				TIME	14.33
			5	FLOW	2217.
				TIME	14.17
			6	FLOW	2792.
				TIME	14.08
HYDROGRAPH AT	B5	2.00	1	FLOW	99.
				TIME	15.08
			2	FLOW	277.
				TIME	14.75
			3	FLOW	425.

				TIME	14.75
			4	FLOW	575.
				TIME	14.67
			5	FLOW	722.
				TIME	14.67
			6	FLOW	888.
				TIME	14.67
ROUTED TO	RT06	2.00	1	FLOW	99.
				TIME	15.25
			2	FLOW	277.
				TIME	14.92
			3	FLOW	425.
				TIME	14.83
			4	FLOW	574.
				TIME	14.75
			5	FLOW	722.
				TIME	14.75
			6	FLOW	887.
				TIME	14.75
HYDROGRAPH AT	B6	1.16	1	FLOW	97.
				TIME	13.42
			2	FLOW	282.
				TIME	13.33
			3	FLOW	423.
				TIME	13.33
			4	FLOW	578.
				TIME	13.33
			5	FLOW	723.
				TIME	13.33
			6	FLOW	874.
				TIME	13.25
2 COMBINED AT	LANGHM	3.16	1	FLOW	147.
				TIME	14.75
			2	FLOW	424.
				TIME	13.75
			3	FLOW	654.
				TIME	13.83
			4	FLOW	900.
				TIME	13.75
			5	FLOW	1132.
				TIME	13.75
			6	FLOW	1391.
				TIME	13.75
2 COMBINED AT	LANGIN	7.69	1	FLOW	339.
				TIME	15.50
			2	FLOW	1100.
				TIME	14.67
			3	FLOW	1799.
				TIME	14.42
			4	FLOW	2556.
				TIME	14.25
			5	FLOW	3306.
				TIME	14.17
			6	FLOW	4146.
				TIME	14.08

ROUTED TO	LANGPL	7.69	1	FLOW	336.
				TIME	15.75
			2	FLOW	1091.
				TIME	14.83
			3	FLOW	1785.
				TIME	14.58
			4	FLOW	2538.
				TIME	14.42
			5	FLOW	3286.
				TIME	14.25
			6	FLOW	4123.
				TIME	14.17
			** PEAK STAGES IN FEET **		
			1	STAGE	2675.40
				TIME	15.75
			2	STAGE	2675.89
				TIME	14.83
			3	STAGE	2676.23
				TIME	14.58
			4	STAGE	2676.56
				TIME	14.42
			5	STAGE	2676.85
				TIME	14.25
			6	STAGE	2677.16
				TIME	14.17
HYDROGRAPH AT	DRYWLS	.73	1	FLOW	65.
				TIME	13.33
			2	FLOW	188.
				TIME	13.25
			3	FLOW	282.
				TIME	13.25
			4	FLOW	385.
				TIME	13.25
			5	FLOW	482.
				TIME	13.17
			6	FLOW	582.
				TIME	13.17
2 COMBINED AT	DRYIN	8.42	1	FLOW	358.
				TIME	15.67
			2	FLOW	1158.
				TIME	14.75
			3	FLOW	1904.
				TIME	14.50
			4	FLOW	2713.
				TIME	14.33
			5	FLOW	3522.
				TIME	14.17
			6	FLOW	4437.
				TIME	14.08
ROUTED TO	DRYWPL	8.42	1	FLOW	0.
				TIME	.08
			2	FLOW	62.
				TIME	24.92
			3	FLOW	541.
				TIME	18.42
			4	FLOW	1231.

				TIME	16.58
			5	FLOW	2161.
				TIME	15.75
			6	FLOW	3234.
				TIME	15.25

** PEAK STAGES IN FEET **

			1	STAGE	2764.18
				TIME	24.92
			2	STAGE	2770.08
				TIME	24.92
			3	STAGE	2770.35
				TIME	18.42
			4	STAGE	2770.60
				TIME	16.58
			5	STAGE	2770.88
				TIME	15.75
			6	STAGE	2771.15
				TIME	15.25
HYDROGRAPH AT	DAVIS	1.34	1	FLOW	79.
				TIME	14.33
			2	FLOW	227.
				TIME	14.08
			3	FLOW	346.
				TIME	14.08
			4	FLOW	472.
				TIME	14.08
			5	FLOW	589.
				TIME	14.08
			6	FLOW	719.
				TIME	14.08
ROUTED TO	DAVPLY	1.34	1	FLOW	74.
				TIME	14.83
			2	FLOW	217.
				TIME	14.50
			3	FLOW	334.
				TIME	14.42
			4	FLOW	456.
				TIME	14.33
			5	FLOW	576.
				TIME	14.33
			6	FLOW	705.
				TIME	14.25

** PEAK STAGES IN FEET **

			1	STAGE	2760.14
				TIME	14.83
			2	STAGE	2760.30
				TIME	14.50
			3	STAGE	2760.40
				TIME	14.42
			4	STAGE	2760.50
				TIME	14.33
			5	STAGE	2760.57
				TIME	14.25
			6	STAGE	2760.66
				TIME	14.25

ROUTED TO	RT07	1.34	1	FLOW	74.
				TIME	15.42
			2	FLOW	217.
				TIME	14.92
			3	FLOW	334.
				TIME	14.75
			4	FLOW	456.
				TIME	14.67
			5	FLOW	576.
				TIME	14.58
			6	FLOW	705.
				TIME	14.58
HYDROGRAPH AT	STAFFD	.57	1	FLOW	54.
				TIME	13.25
			2	FLOW	157.
				TIME	13.17
			3	FLOW	235.
				TIME	13.08
			4	FLOW	321.
				TIME	13.08
			5	FLOW	404.
				TIME	13.08
			6	FLOW	486.
				TIME	13.08
ROUTED TO	STAFPL	.57	1	FLOW	46.
				TIME	13.58
			2	FLOW	146.
				TIME	13.42
			3	FLOW	224.
				TIME	13.33
			4	FLOW	309.
				TIME	13.33
			5	FLOW	388.
				TIME	13.25
			6	FLOW	471.
				TIME	13.25
			** PEAK STAGES IN FEET **		
			1	STAGE	2740.10
				TIME	13.58
			2	STAGE	2740.23
				TIME	13.42
			3	STAGE	2740.31
				TIME	13.33
			4	STAGE	2740.38
				TIME	13.33
			5	STAGE	2740.44
				TIME	13.25
			6	STAGE	2740.51
				TIME	13.25
ROUTED TO	RT08	.57	1	FLOW	46.
				TIME	14.00
			2	FLOW	146.
				TIME	13.67
			3	FLOW	224.
				TIME	13.58
			4	FLOW	308.

				TIME	13.50
			5	FLOW	386.
				TIME	13.50
			6	FLOW	470.
				TIME	13.42
HYDROGRAPH AT	HALE	1.15	1	FLOW	67.
				TIME	14.33
			2	FLOW	192.
				TIME	14.17
			3	FLOW	292.
				TIME	14.17
			4	FLOW	398.
				TIME	14.17
			5	FLOW	497.
				TIME	14.08
			6	FLOW	608.
				TIME	14.08
3 COMBINED AT	HALEIN	3.06	1	FLOW	159.
				TIME	15.00
			2	FLOW	471.
				TIME	14.50
			3	FLOW	742.
				TIME	14.33
			4	FLOW	1010.
				TIME	14.25
			5	FLOW	1279.
				TIME	14.17
			6	FLOW	1574.
				TIME	14.17
ROUTED TO	HALEPL	3.06	1	FLOW	153.
				TIME	15.33
			2	FLOW	464.
				TIME	14.75
			3	FLOW	733.
				TIME	14.58
			4	FLOW	1003.
				TIME	14.42
			5	FLOW	1269.
				TIME	14.33
			6	FLOW	1564.
				TIME	14.25
			** PEAK STAGES IN FEET **		
			1	STAGE	2700.24
				TIME	15.33
			2	STAGE	2700.50
				TIME	14.67
			3	STAGE	2700.68
				TIME	14.58
			4	STAGE	2700.84
				TIME	14.42
			5	STAGE	2700.98
				TIME	14.33
			6	STAGE	2701.13
				TIME	14.25
ROUTED TO	RT09	3.06	1	FLOW	153.

				TIME	15.67
			2	FLOW	464.
				TIME	14.92
			3	FLOW	733.
				TIME	14.75
			4	FLOW	1002.
				TIME	14.58
			5	FLOW	1268.
				TIME	14.50
			6	FLOW	1563.
				TIME	14.42
HYDROGRAPH AT	HUNT	.93	1	FLOW	68.
				TIME	13.75
			2	FLOW	197.
				TIME	13.58
			3	FLOW	298.
				TIME	13.58
			4	FLOW	407.
				TIME	13.58
			5	FLOW	508.
				TIME	13.58
			6	FLOW	616.
				TIME	13.50
3 COMBINED AT	HWY26	12.41	1	FLOW	189.
				TIME	15.50
			2	FLOW	572.
				TIME	14.75
			3	FLOW	921.
				TIME	14.50
			4	FLOW	1847.
				TIME	16.42
			5	FLOW	3264.
				TIME	15.58
			6	FLOW	4876.
				TIME	15.08
ROUTED TO	RT10	12.41	1	FLOW	188.
				TIME	15.75
			2	FLOW	572.
				TIME	14.92
			3	FLOW	921.
				TIME	14.58
			4	FLOW	1846.
				TIME	16.50
			5	FLOW	3263.
				TIME	15.67
			6	FLOW	4876.
				TIME	15.17
HYDROGRAPH AT	MARILN	1.32	1	FLOW	168.
				TIME	12.83
			2	FLOW	483.
				TIME	12.75
			3	FLOW	719.
				TIME	12.75
			4	FLOW	978.
				TIME	12.75
			5	FLOW	1231.

				TIME	12.75
			6	FLOW	1477.
				TIME	12.75
2 COMBINED AT	MRLIN	13.73	1	FLOW	221.
				TIME	15.50
			2	FLOW	660.
				TIME	14.75
			3	FLOW	1061.
				TIME	14.50
			4	FLOW	1952.
				TIME	16.50
			5	FLOW	3399.
				TIME	15.67
			6	FLOW	5082.
				TIME	15.17
ROUTED TO	MRLNPL	13.73	1	FLOW	211.
				TIME	16.00
			2	FLOW	640.
				TIME	15.17
			3	FLOW	1031.
				TIME	14.83
			4	FLOW	1890.
				TIME	16.83
			5	FLOW	3285.
				TIME	15.92
			6	FLOW	4926.
				TIME	15.42
			** PEAK STAGES IN FEET **		
			1	STAGE	2640.14
				TIME	15.92
			2	STAGE	2640.30
				TIME	15.17
			3	STAGE	2640.40
				TIME	14.83
			4	STAGE	2640.61
				TIME	16.83
			5	STAGE	2640.88
				TIME	15.92
			6	STAGE	2641.16
				TIME	15.42
ROUTED TO	RT11	13.73	1	FLOW	211.
				TIME	16.42
			2	FLOW	639.
				TIME	15.42
			3	FLOW	1031.
				TIME	15.08
			4	FLOW	1889.
				TIME	17.00
			5	FLOW	3284.
				TIME	16.08
			6	FLOW	4919.
				TIME	15.58
HYDROGRAPH AT	ELLSBY	2.28	1	FLOW	145.
				TIME	14.08
			2	FLOW	418.

				TIME	13.92
			3	FLOW	635.
				TIME	13.92
			4	FLOW	866.
				TIME	13.92
			5	FLOW	1082.
				TIME	13.83
			6	FLOW	1318.
				TIME	13.83
2 COMBINED AT	ELLSIN	16.01	1	FLOW	288.
				TIME	16.08
			2	FLOW	889.
				TIME	15.08
			3	FLOW	1495.
				TIME	14.67
			4	FLOW	2128.
				TIME	17.00
			5	FLOW	3701.
				TIME	16.00
			6	FLOW	5585.
				TIME	15.50
ROUTED TO	ELLSPL	16.01	1	FLOW	273.
				TIME	16.75
			2	FLOW	866.
				TIME	15.50
			3	FLOW	1446.
				TIME	15.08
			4	FLOW	2053.
				TIME	17.33
			5	FLOW	3543.
				TIME	16.33
			6	FLOW	5354.
				TIME	15.83
			** PEAK STAGES IN FEET **		
			1	STAGE	2625.22
				TIME	16.67
			2	STAGE	2625.48
				TIME	15.50
			3	STAGE	2625.67
				TIME	15.08
			4	STAGE	2625.85
				TIME	17.33
			5	STAGE	2626.23
				TIME	16.33
			6	STAGE	2626.62
				TIME	15.83
ROUTED TO	RT12	16.01	1	FLOW	273.
				TIME	17.08
			2	FLOW	865.
				TIME	15.75
			3	FLOW	1445.
				TIME	15.33
			4	FLOW	2052.
				TIME	17.58
			5	FLOW	3541.
				TIME	16.50

			6	FLOW	5349.
				TIME	16.00
HYDROGRAPH AT	HUGHES	2.05	1	FLOW	118.
				TIME	14.42
			2	FLOW	337.
				TIME	14.17
			3	FLOW	515.
				TIME	14.17
			4	FLOW	701.
				TIME	14.17
			5	FLOW	876.
				TIME	14.17
			6	FLOW	1071.
				TIME	14.17
2 COMBINED AT	HUGHIN	18.06	1	FLOW	332.
				TIME	16.75
			2	FLOW	1088.
				TIME	15.17
			3	FLOW	1849.
				TIME	15.00
			4	FLOW	2625.
				TIME	14.83
			5	FLOW	3905.
				TIME	16.50
			6	FLOW	5920.
				TIME	15.92
ROUTED TO	HUGHPL	18.06	1	FLOW	331.
				TIME	17.00
			2	FLOW	1086.
				TIME	15.42
			3	FLOW	1844.
				TIME	15.08
			4	FLOW	2617.
				TIME	14.92
			5	FLOW	3892.
				TIME	16.58
			6	FLOW	5900.
				TIME	16.00
			** PEAK STAGES IN FEET **		
			1	STAGE	2590.40
				TIME	17.00
			2	STAGE	2590.88
				TIME	15.33
			3	STAGE	2591.25
				TIME	15.08
			4	STAGE	2591.59
				TIME	14.92
			5	STAGE	2592.07
				TIME	16.58
			6	STAGE	2592.73
				TIME	16.00
ROUTED TO	RT13	18.06	1	FLOW	331.
				TIME	17.25
			2	FLOW	1086.
				TIME	15.58

			3	FLOW	1844.
				TIME	15.25
			4	FLOW	2615.
				TIME	15.08
			5	FLOW	3888.
				TIME	16.67
			6	FLOW	5895.
				TIME	16.08
HYDROGRAPH AT	SH846B	.47	1	FLOW	46.
				TIME	13.17
			2	FLOW	134.
				TIME	13.08
			3	FLOW	200.
				TIME	13.08
			4	FLOW	273.
				TIME	13.08
			5	FLOW	342.
				TIME	13.08
			6	FLOW	411.
				TIME	13.00
2 COMBINED AT	SH846X	18.53	1	FLOW	338.
				TIME	17.17
			2	FLOW	1116.
				TIME	15.50
			3	FLOW	1892.
				TIME	15.25
			4	FLOW	2673.
				TIME	15.00
			5	FLOW	3932.
				TIME	16.67
			6	FLOW	5955.
				TIME	16.08
HYDROGRAPH AT	CURRIE	2.54	1	FLOW	108.
				TIME	15.92
			2	FLOW	296.
				TIME	15.50
			3	FLOW	454.
				TIME	15.50
			4	FLOW	607.
				TIME	15.42
			5	FLOW	768.
				TIME	15.42
			6	FLOW	949.
				TIME	15.42
ROUTED TO	RT14	2.54	1	FLOW	108.
				TIME	16.42
			2	FLOW	296.
				TIME	15.92
			3	FLOW	454.
				TIME	15.83
			4	FLOW	607.
				TIME	15.67
			5	FLOW	768.
				TIME	15.67
			6	FLOW	949.
				TIME	15.67

HYDROGRAPH AT	BLGRAV	1.90	1	FLOW	113.
				TIME	14.25
			2	FLOW	324.
				TIME	14.08
			3	FLOW	495.
				TIME	14.08
			4	FLOW	674.
				TIME	14.08
			5	FLOW	842.
				TIME	14.00
			6	FLOW	1027.
				TIME	14.00
2 COMBINED AT	BLGIN	4.44	1	FLOW	181.
				TIME	15.58
			2	FLOW	516.
				TIME	14.83
			3	FLOW	803.
				TIME	14.75
			4	FLOW	1091.
				TIME	14.67
			5	FLOW	1383.
				TIME	14.67
			6	FLOW	1711.
				TIME	14.67
ROUTED TO	BLGRPL	4.44	1	FLOW	172.
				TIME	16.42
			2	FLOW	490.
				TIME	15.50
			3	FLOW	771.
				TIME	15.33
			4	FLOW	1052.
				TIME	15.08
			5	FLOW	1343.
				TIME	15.00
			6	FLOW	1670.
				TIME	15.00
			** PEAK STAGES IN FEET **		
			1	STAGE	2635.26
				TIME	16.42
			2	STAGE	2635.52
				TIME	15.50
			3	STAGE	2635.70
				TIME	15.25
			4	STAGE	2635.86
				TIME	15.08
			5	STAGE	2636.02
				TIME	15.00
			6	STAGE	2636.18
				TIME	15.00
ROUTED TO	RT15	4.44	1	FLOW	172.
				TIME	17.33
			2	FLOW	490.
				TIME	16.17
			3	FLOW	771.
				TIME	15.83

			4	FLOW	1052.
				TIME	15.58
			5	FLOW	1342.
				TIME	15.50
			6	FLOW	1670.
				TIME	15.42
HYDROGRAPH AT	WRIGHT	.73	1	FLOW	88.
				TIME	12.92
			2	FLOW	255.
				TIME	12.83
			3	FLOW	378.
				TIME	12.83
			4	FLOW	515.
				TIME	12.83
			5	FLOW	648.
				TIME	12.75
			6	FLOW	780.
				TIME	12.75
ROUTED TO	WRGHTP	.73	1	FLOW	43.
				TIME	13.67
			2	FLOW	154.
				TIME	13.42
			3	FLOW	254.
				TIME	13.33
			4	FLOW	368.
				TIME	13.25
			5	FLOW	479.
				TIME	13.17
			6	FLOW	596.
				TIME	13.17
			** PEAK STAGES IN FEET **		
			1	STAGE	2625.10
				TIME	13.67
			2	STAGE	2625.24
				TIME	13.42
			3	STAGE	2625.33
				TIME	13.25
			4	STAGE	2625.43
				TIME	13.25
			5	STAGE	2625.51
				TIME	13.17
			6	STAGE	2625.59
				TIME	13.17
ROUTED TO	RT16	.73	1	FLOW	43.
				TIME	14.08
			2	FLOW	154.
				TIME	13.67
			3	FLOW	254.
				TIME	13.50
			4	FLOW	366.
				TIME	13.50
			5	FLOW	477.
				TIME	13.42
			6	FLOW	595.
				TIME	13.33

HYDROGRAPH AT	B18	1.95	1	FLOW	111.
				TIME	14.42
			2	FLOW	317.
				TIME	14.25
			3	FLOW	484.
				TIME	14.25
			4	FLOW	659.
				TIME	14.17
			5	FLOW	824.
				TIME	14.17
			6	FLOW	1008.
				TIME	14.17
HYDROGRAPH AT	B19	1.60	1	FLOW	143.
				TIME	13.33
			2	FLOW	418.
				TIME	13.25
			3	FLOW	625.
				TIME	13.25
			4	FLOW	854.
				TIME	13.17
			5	FLOW	1072.
				TIME	13.17
			6	FLOW	1293.
				TIME	13.17
4 COMBINED AT	RAYLNG	8.72	1	FLOW	284.
				TIME	16.25
			2	FLOW	857.
				TIME	15.33
			3	FLOW	1387.
				TIME	15.08
			4	FLOW	1883.
				TIME	14.83
			5	FLOW	2460.
				TIME	14.67
			6	FLOW	3111.
				TIME	14.67
ROUTED TO	RT17	8.72	1	FLOW	284.
				TIME	16.42
			2	FLOW	856.
				TIME	15.42
			3	FLOW	1387.
				TIME	15.17
			4	FLOW	1883.
				TIME	14.92
			5	FLOW	2460.
				TIME	14.75
			6	FLOW	3110.
				TIME	14.75
HYDROGRAPH AT	BATJER	.91	1	FLOW	84.
				TIME	13.25
			2	FLOW	244.
				TIME	13.17
			3	FLOW	366.
				TIME	13.17
			4	FLOW	500.
				TIME	13.17

			5	FLOW	625.
				TIME	13.17
			6	FLOW	754.
				TIME	13.17
2 COMBINED AT	BTJOUT	9.63	1	FLOW	316.
				TIME	13.75
			2	FLOW	987.
				TIME	13.58
			3	FLOW	1531.
				TIME	13.50
			4	FLOW	2123.
				TIME	13.50
			5	FLOW	2686.
				TIME	13.42
			6	FLOW	3366.
				TIME	14.58

*** NORMAL END OF HEC-1 ***

NORMAL END OF HEC-1

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*                                      *                                        *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                        *   U.S. ARMY CORPS OF ENGINEERS       *
*             FEBRUARY 1981            *                                        * THE HYDROLOGIC ENGINEERING CENTER    *
*           REVISED 02 AUG 88          *                                        *        609 SECOND STREET             *
*                                      *                                        *     DAVIS, CALIFORNIA 95616          *
*  RUN DATE  09/14/1990  TIME  10:31:42 *                                       *                                      *
*                                      *                                        *                                      *
****************************************                                        ****************************************


                                   X     X  XXXXXXX   XXXXX           X
                                   X     X  X        X     X         XX
                                   X     X  X        X                X
                                   XXXXXXX  XXXX     X        XXXXX   X
                                   X     X  X        X                X
                                   X     X  X        X     X          X
                                   X     X  XXXXXXX   XXXXX          XXX


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                                 ::::::::::::::::::::::::::::::::::::::::
                                 :::                                  :::
                                 :::  Full Microcomputer Implementation :::
                                 :::                by                 :::
                                 :::         Haestad Methods, Inc.     :::
                                 :::                                  :::
                                 ::::::::::::::::::::::::::::::::::::::::
                                 ::::::::::::::::::::::::::::::::::::::::

                     37 Brookside Road * Waterbury, Connecticut  06708 * (203) 755-1666


          THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

          THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
          THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
          NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
          DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
          KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM
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          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

          *DIAGRAM
          ID    MARTIN COUNTY FLOOD CONTROL STUDY     JOB NO. 06901-001-036
          ID    HDR ENGINEERING, INC.                 AUSTIN, TEXAS
          ID
          ID    BROWN AREA PROPOSED ALTERNATIVES
          ID
          ID    COMPUTING 2-YR, 5-YR, 10-YR, 25-YR, 50-YR, AND 100-YR FLOOD EVENTS
          ID    FOR BROWN AREA USING PLAN OPTION IN HEC-1.
          ID
          ID              PLAN 1:   2-YEAR EVENT
          ID              PLAN 2:   5-YEAR EVENT
          ID              PLAN 3:  10-YEAR EVENT
          ID              PLAN 4:  25-YEAR EVENT
          ID              PLAN 5:  50-YEAR EVENT
          ID              PLAN 6: 100-YEAR EVENT
          ID
          ID
          IT       5                     300
          IO       5       0
          JP       6

          KK  BECKMY
          KM    RUNOFF HYDROGRAPH FOR BECKMEYER SUBBASIN
          KP       1
          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
          BA    1.01
          LS       0      72
          UD    0.83
          KP       2
          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
          KP       3
          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
          KP       4
          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
          KP       5
          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
          KP       6
          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

          KK  BECKPL
          KM    ROUTE BECKMEYER RUNOFF HYDROGRAPH THROUGH BECKMEYER PLAYA
          KM    PIPE INVERT AT EL 2655
          KM    SPILL AT 2660
          RS       1    ELEV    2755
          SV       0     154     438
          SE    2755    2760    2765
          SL    2755     3.1     0.6     0.5
          SS    2760     500     2.6     1.5

          KK    RT01
          KM    ROUTE BECKMEYER PLAYA OUTFLOW HYDROGRAPH TO MULLINS PLAYA
          RK    4500   .0044   0.030            TRAP      30       4
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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


  49            KK  MULLIN
  50            KM    RUNOFF HYDROGRAPH FOR MULLINS SUBBASIN
  51            PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
  52            BA    1.94
  53            LS       0      72
  54            UD    1.20
  55            KP       2
  56            PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
  57            KP       3
  58            PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
  59            KP       4
  60            PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
  61            KP       5
  62            PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
  63            KP       6
  64            PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

  65            KK  MULLIN
  66            KM    COMBINE RT01 WITH MULLINS HYDROGRAPH TO GIVE INFLOW TO MULLINS PLAYA
  67            HC       2

  68            KK  MULLPL
  69            KM    ROUTE MULLIN INFLOW HYDROGRAPH THROUGH MULLINS PLAYA
  70            KM    PIPE INVERT AT 2735
  71            KM    SPILL AT 2740.5
  72            RS       1    ELEV    2735
  73            SV       0     111     276
  74            SE    2735    2740    2745
  75            SL    2735     3.1     0.6     1.5
  76            SS  2740.5     500     2.6     1.5

  77            KK    RT02
  78            KM    ROUTE MULLPL TO COOK OUTLET
  79            RK    4000   .0062   0.030            TRAP      30       4

  80            KK    COOK
  81            KM    RUNOFF HYDROGRAPH FOR COOK SUBBASIN
  82            PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
  83            BA    0.84
  84            LS       0      72
  85            UD    0.97
  86            KP       2
  87            PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
  88            KP       3
  89            PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
  90            KP       4
  91            PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
  92            KP       5
  93            PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
  94            KP       6
  95            PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 96           KK   CKOUT
 97           KM    COMBINE RT02 WITH COOK HYDROGRAPH TO GIVE TOTAL HYDROGRAPH AT COOK OUTLET
 98           HC        2

 99           KK    RT03
100           KM    ROUTE COOK OUTFLOW HYDROGRAPH TO BOND LAKE
101           RK    4000   .0037   0.030            TRAP      30        4

102           KK    BOND
103           KM    RUNOFF HYDROGRAPH FOR BOND LAKE SUBBBASIN
104           PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
105           BA    0.74
106           LS       0      72
107           UD    1.00
108           KP       2
109           PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
110           KP       3
111           PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
112           KP       4
113           PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
114           KP       5
115           PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
116           KP       6
117           PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

118           KK  BONDIN
119           KM    COMBINE RT03 WITH BOND HYDROGRAPH TO GIVE INFLOW HYDROGRAPH TO BOND LAKE
120           HC       2

121           KK  BONDLK
122           KM    ROUTE BOND LAKE INFLOW HYDROGRAPH THROUGH BOND LAKE
123           KM    PIPE INVERT AT EL 2700
124           KM    SPILL AT EL 2703
125           RS       1    ELEV    2700
126           SV       0     342
127           SE    2700    2705
128           SL    2700     3.1     0.6     0.5
129           SS    2703     500     2.6     1.5

130           KK    RT04
131           KM    ROUTE BOND LAKE OUTFLOW HYDROGRAPH TO LANGHAM PLAYA
132           RK    5500   .0027   0.030            TRAP      30        4

133           KK      B5
134           KM    RUNOFF HYDROGRAPH FOR B5 SUBBASIN
135           PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
136           BA    2.00
137           LS       0      72
138           UD    2.40
139           KP       2
140           PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
141           KP       3
142           PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
143           KP       4
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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 144        PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 145        KP       5
 146        PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 147        KP       6
 148        PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 149        KK    RT06
 150        KM    ROUTE B5 RUNOFF HYDROGRAPH TO LANGHAM PLAYA
 151        RK    5000   .0060   0.030            TRAP       5       1

 152        KK      B6
 153        KM    RUNOFF HYDROGRAPH FOR B6 SUBBASIN
 154        PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 155        BA    1.16
 156        LS       0      72
 157        UD    1.15
 158        KP       2
 159        PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 160        KP       3
 161        PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 162        KP       4
 163        PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 164        KP       5
 165        PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 166        KP       6
 167        PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 168        KK  LANGHM
 169        KM    COMBINE RT06 AND B6 HYDROGRAPHS TO GIVE LANGHAM SUBBASIN RUNOFF HYDROGRAPH
 170        HC       2

 171        KK  LANGIN
 172        KM    COMBINE LANGHM AND RT04 HYDROGRAPH TO GIVE INFLOW HYDROGRAPH TO LANGHAM LAKE
 173        HC       2

 174        KK  LANGPL
 175        KM    ROUTE LANGHAM PLAYA INFLOW HYDROGRAPH THROUGH LANGHAM PLAYA
 176        KM    PIPE INVERT AT 2670
 177        KM    SPILL AT 2675
 178        RS       1    ELEV    2670
 179        SV       0     114     228
 180        SE    2670    2675    2680
 181        SL    2670     3.1     0.6     0.5
 182        SS    2675     500     2.6     1.5

 183        KK  DRYWLS
 184        KM    RUNOFF HYDROGRAPH FOR DRY WELLS SUBBASIN
 185        PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 186        BA    0.73
 187        LS       0      72
 188        UD    1.06
 189        KP       2
 190        PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 191        KP       3
 192        PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 193          KP       4
 194          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 195          KP       5
 196          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 197          KP       6
 198          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 199          KK   DRYIN
 200          KM     COMBINE LANGHAM PLAYA OUTFLOW HYDROGRAPH WITH DRY WELLS RUNOFF HYDROGRAPH
 201          KM     TO GIVE INFLOW HYDROGRAPH TO DRY WELLS PLAYA
 202          HC       2

 203          KK  DRYWPL
 204          KM     ROUTE DRY WELLS PLAYA INFLOW HYDROGRAPH THROUG DRY WELLS PLAYA
 205          RS       1    ELEV    2765
 206          SV       0      68     208     485     970
 207          SE    2755    2760    2765    2770    2775
 208          SL    2765     3.1     0.6     1.5
 209          SS    2770    1000     2.6     1.5

 210          KK   DAVIS
 211          KM     RUNOFF HYDROGRAPH FOR DAVIS SUBBASIN
 212          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 213          BA    1.34
 214          LS       0      72
 215          UD    1.85
 216          KP       2
 217          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 218          KP       3
 219          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 220          KP       4
 221          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 222          KP       5
 223          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 224          KP       6
 225          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 226          KK  DAVPLY
 227          KM     ROUTE DAVIS RUNOFF HYDROGRAPH THROUGH DAVIS PLAYA
 228          RS       1    ELEV    2760
 229          SV       0      68     208     485
 230          SE    2755    2760    2765    2770
 231          SL    2760     3.1     0.6     0.5
 232          SS    2765     500     2.6     1.5

 233          KK    RT07
 234          KM     ROUTE DAVIS PLAYA OUTFLOW HYDROGRAPH TO HALE PLAYA
 235          RK    9300   .0060   0.030            TRAP      30       4

 236          KK  STAFFD
 237          KM     RUNOFF HYDROGRAPH FOR STAFFORD SUBBASIN
 238          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 239          BA    0.57
 240          LS       0      72
 241          UD    0.96
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 242          KP       2
 243          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 244          KP       3
 245          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 246          KP       4
 247          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 248          KP       5
 249          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 250          KP       6
 251          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 252          KK  STAFPL
 253          KM    ROUTE STAFFORD RUNOFF HYDROGRAPH THROUGH STAFFORD PLAYA
 254          RS       1    ELEV    2740
 255          SV       0      84     256
 256          SE    2740    2745    2750
 257          SL    2740     3.1     0.6     0.5
 258          SS    2745     500     2.6     1.5

 259          KK    RT08
 260          KM    ROUTE STAFFORD PLAYA OUTFLOW HYDROGRAPH TO HALE PLAYA
 261          RK    5500   .0060   0.030            TRAP      30       4

 262          KK    HALE
 263          KM    RUNOFF HYDROGRAPH FOR HALE SUBBASIN
 264          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 265          BA    1.15
 266          LS       0      72
 267          UD    1.89
 268          KP       2
 269          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 270          KP       3
 271          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 272          KP       4
 273          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 274          KP       5
 275          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 276          KP       6
 277          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 278          KK  HALEIN
 279          KM    COMBINE HALE - RT07 - RT08 TO GIVE INFLOW HYDROGRAPH TO HALE PLAYA
 280          HC       3

 281          KK  HALEPL
 282          KM    ROUTE HALE INFLOW HYDROGRAPH THROUGH HALE PLAYA
 283          RS       1    ELEV    2700
 284          SV       0     114     386
 285          SE    2700    2705    2710
 286          SL    2700     3.1     0.6     0.5
 287          SS    2705     500     2.6     1.5
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ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

KK   RT09
KM   ROUTE HALE PLAYA OUTFLOW HYDROGRAPH TO HWY 26 CROSSING
RK   8000   .0056   0.030             TRAP       5       1

KK   HUNT
KM   RUNOFF HYDROGRAPH FOR HUNT SUBBASIN
PH     50    28.2    0.42    0.8     1.4     1.6     1.7     2.1     2.4     2.8
BA   0.93
LS      0      72
UD   1.38
KP      2
PH     20    28.2    0.51    1.0     1.9     2.2     2.3     2.8     3.3     3.9
KP      3
PH     10    28.2    0.58    1.2     2.2     2.6     2.8     3.4     3.9     4.6
KP      4
PH      4    28.2    0.67    1.4     2.6     3.1     3.3     3.8     4.7     5.3
KP      5
PH      2    28.2    0.75    1.5     3.0     3.4     3.7     4.4     5.3     6.1
KP      6
PH      1    28.2    0.82    1.7     3.3     3.8     4.2     5.1     5.9     6.9

KK  HWY26
KM   COMBINE HYDROGRAPHS AT HWY 26 CROSSING
HC      3

KK   RT10
KM   ROUTE HWY26 HYDROGRAPH TO MARILYN PLAYA
RK   4000   .0037   0.030             TRAP      30       4

KK MARILN
KM   RUNOFF HYDROGRAPH FOR MARILYN SUBBASIN
PH     50    28.2    0.42    0.8     1.4     1.6     1.7     2.1     2.4     2.8
BA   1.32
LS      0      72
UD   0.62
KP      2
PH     20    28.2    0.51    1.0     1.9     2.2     2.3     2.8     3.3     3.9
KP      3
PH     10    28.2    0.58    1.2     2.2     2.6     2.8     3.4     3.9     4.6
KP      4
PH      4    28.2    0.67    1.4     2.6     3.1     3.3     3.8     4.7     5.3
KP      5
PH      2    28.2    0.75    1.5     3.0     3.4     3.7     4.4     5.3     6.1
KP      6
PH      1    28.2    0.82    1.7     3.3     3.8     4.2     5.1     5.9     6.9

KK  MRLIN
KM   COMBINE RT10 WITH MARILN RUNOFF HYDROGRAPH TO GIVE INFLOW HYDROGRAPH INTO
KM   MARILYN PLAYA
HC      2
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 333          KK  MRLNPL
 334          RS       1    ELEV    2640
 335          SV       0     122     602    1706
 336          SE    2635    2640    2645    2650
 337          SL    2640     3.1     0.6     0.5
 338          SS    2643    1500     2.6     1.5

 339          KK    RT11
 340          KM    ROUTE MARILYN PLAYA OUTFLOW HYDORGRAPH TO COUNTY ROAD B1 CROSSING
 341          RK    7000   .0028   0.030            TRAP      30       4

 342          KK  ELLSBY
 343          KM    RUNOFF HYDROGRAPH FOR ELLSBERRY SUBBASIN
 344          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 345          BA    2.28
 346          LS       0      72
 347          UD    1.67
 348          KP       2
 349          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 350          KP       3
 351          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 352          KP       4
 353          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 354          KP       5
 355          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 356          KP       6
 357          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 358          KK  ELLSIN
 359          KM    COMBINE ELLSBY RUNOFF HYDROGRAPH WITH RT11 TO GIVE HYDROGRAPH AT ELLSBERRY
 360          KM    PLAYA
 361          HC       2

 362          KK  ELLSPL
 363          KM    ROUTE ELLSBERRY INFLOW HYDROGRAPH THROUGH ELLSBERRY PLAYA
 364          RS       1    ELEV    2620
 365          SV       0     522    1044
 366          SE    2620    2625    2630
 367          SL    2620     3.1     0.6     0.5
 368          SS    2625    1000     2.6     1.5

 369          KK    RT12
 370          KM    ROUTE COUNTY ROAD CROSSING HYDROGRAPH TO HUGHES PLAYA
 371          RK    8000   .0030   0.030            TRAP      30       4

 372          KK  HUGHES
 373          KM    RUNOFF HYDROGRAPH FOR HUGHES SUBBASIN
 374          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 375          BA    2.05
 376          LS       0      72
 377          UD    1.92
 378          KP       2
 379          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 380          KP       3
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 381          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 382          KP       4
 383          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 384          KP       5
 385          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 386          KP       6
 387          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 388          KK  HUGHIN
 389          KM    COMBIE RT12 WITH HUGHES RUNOFF HYDROGRAPH TO GIVE INFLOW HYDROGRAPH INTO
 390          KM    HUGHES PLAYA
 391          HC       2

 392          KK  HUGHPL
 393          KM    ROUTE HUGHES PLAYA INFLOW HYDROGRAPH THROUGH HUGHES PLAYA
 394          RS       1    ELEV    2590
 395          SV       0     106     480    1328
 396          SE    2590    2595    2600    2605
 397          SL    2590     3.1     0.6     0.5
 398          SS    2596     500     2.6     1.5

 399          KK    RT13
 400          KM    ROUTE HUGHES PLAYA OUTFLOW HYDROGRAPH TO HWY 846 CROSSING
 401          RK    5500   .0030   0.030            TRAP      20       4

 402          KK  SH846B
 403          KM    RUNOFF HYDROGRAPH FOR S.H. 846 B SUBBASIN
 404          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 405          BA    0.47
 406          LS       0      72
 407          UD    0.92
 408          KP       2
 409          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 410          KP       3
 411          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 412          KP       4
 413          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 414          KP       5
 415          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 416          KP       6
 417          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 418          KK  SH846X
 419          KM    COMBINE RT13 WITH SH846B RUNOFF HYDROGRAPH TO GIVE HYDROGRAPH AT
 420          KM    S.H. 846 CROSSING WEST OF BATJER PLAYA
 421          HC       2

 422          KK  CURRIE
 423          KM    RUNOFF HYDROGRAPH FOR CURRIE SUBBASIN
 424          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 425          BA    2.54
 426          LS       0      72
 427          UD    3.03
 428          KP       2
 429          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
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LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 430           KP       3
 431           PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 432           KP       4
 433           PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 434           KP       5
 435           PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 436           KP       6
 437           PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 438           KK  CURDET
 439           KM     ROUTE CURRIE RUNOFF HYDROGRAPH THROUGH CURRIE DETENTION BASIN
 440           RS       1    ELEV    2668
 441           SV       0      19     366    1447
 442           SE    2668    2670    2675    2680
 443           SL    2668     3.1     0.6     0.5
 444           SS    2673     500     2.6     1.5

 445           KK    RT14
 446           KM     ROUTE CURRIE RUNOFF HYDROGRAPH TO BLAGRAVE PLAYA
 447           RK    8000   .0038   0.030            TRAP      30       4

 448           KK  BLGRAV
 449           KM     RUNOFF HYDROGRAPH FOR BLAGRAVE SUBBASIN
 450           PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 451           BA    1.90
 452           LS       0      72
 453           UD    1.83
 454           KP       2
 455           PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 456           KP       3
 457           PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 458           KP       4
 459           PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 460           KP       5
 461           PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 462           KP       6
 463           PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 464           KK   BLGIN
 465           KM     COMBINE RT14 HYDROGRAPH WITH BLGRAV HYDROGRAPH TO GIVE INFLOW HYDROGRAPH
 466           KM     FOR BLAGRAVE PLAYA
 467           HC       2

 468           KK  BLGRPL
 469           KM     ROUTE BLAGRAVE PLAYA INFLOW HYDROGRAPH THROUGH BLAGRAVE PLAYA
 470           RS       1    ELEV    2630
 471           SV       0      76     347
 472           SE    2630    2635    2640
 473           SL    2630     3.1     0.6     0.5
 474           SS    2637     500     2.6     1.5
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 475          KK    RT15
 476          KM    ROUTE BLAGRAVE PLAYA OUTFLOW HYDROGRAPH TO RAYLONG PLAYAS
 477          RK   14000   .0028   0.030            TRAP      30       4

 478          KK  WRIGHT
 479          KM    RUNOFF HYDROGRAPH FOR WRIGHT SUBBASIN
 480          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 481          BA    0.73
 482          LS       0      72
 483          UD    0.67
 484          KP       2
 485          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 486          KP       3
 487          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 488          KP       4
 489          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 490          KP       5
 491          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 492          KP       6
 493          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 494          KK  WRGHTP
 495          KM    ROUTE WRIGHT RUNOFF HYDROGRAPH THROUGH WRIGHT PLAYA
 496          RS       1    ELEV    2622
 497          SV       0      10      72     322     572
 498          SE    2613    2615    2620    2625    2630
 499          SL    2622     3.1     0.6     0.5
 500          SS    2625     500     2.6     1.5

 501          KK    RT16
 502          KM    ROUTE WRIGHT PLAYA OUTFLOW HYDROGRAPH TO RAYLONG PLAYAS
 503          RK    6000   .0050   0.030            TRAP      20       4

 504          KK     B18
 505          KM    RUNOFF HYDROGRAPH FOR B18 SUBBASIN
 506          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 507          BA    1.95
 508          LS       0      72
 509          UD    1.95
 510          KP       2
 511          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 512          KP       3
 513          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 514          KP       4
 515          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 516          KP       5
 517          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 518          KP       6
 519          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9
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ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

KK    B19
KM    RUNOFF HYDROGRAPH FOR B19 SUBBASIN
PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
BA    1.60
LS       0      72
UD    1.04
KP       2
PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
KP       3
PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
KP       4
PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
KP       5
PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
KP       6
PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

KK  RAYLNG
KM    COMBINE B18 - B19 - RT15 - RT16 TO GIVE INFLOW HYDROGRAPH TO RAYLONG PLAYAS
HC       4

KK    RT17
KM    ROUTE RAYLONG HYDROGRAPH TO S.H. 846
RK    4000   .0038   0.030            TRAP      10       4

KK  BATJER
KM    RUNOFF HYDROGRAPH FOR BATJER SUBBASIN
PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
BA    0.91
LS       0      72
UD    1.00
KP       2
PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
KP       3
PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
KP       4
PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
KP       5
PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
KP       6
PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

KK  BTJOUT
HC       2
ZZ
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                       SCHEMATIC DIAGRAM OF STREAM NETWORK
       INPUT
        LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

         NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

          20      BECKMY
                       V
                       V
          37      BECKPL
                       V
                       V
          46        RT01
                       .
                       .
          49           .      MULLIN
                       .           .
                       .           .
          65      MULLIN............
                       V
                       V
          68      MULLPL
                       V
                       V
          77        RT02
                       .
                       .
          80           .        COOK
                       .           .
                       .           .
          96       CKOUT............
                       V
                       V
          99        RT03
                       .
                       .
         102           .        BOND
                       .           .
                       .           .
         118      BONDIN............
                       V
                       V
         121      BONDLK
                       V
                       V
         130        RT04
                       .
                       .
         133           .          B5
                       .           V
                       .           V
         149           .        RT06
                       .           .
                       .           .
         152           .           .          B6
                       .           .           .
                       .           .           .
         168           .      LANGHM............
                       .           .
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               .           .
171      LANGIN............
               V
               V
174      LANGPL
               .
               .
183            .     DRYWLS
               .           .
               .           .
199       DRYIN............
               V
               V
203      DRYWPL
               .
               .
210            .      DAVIS
               .           V
               .           V
226            .     DAVPLY
               .           V
               .           V
233            .       RT07
               .           .
               .           .
236            .           .     STAFFD
               .           .          V
               .           .          V
252            .           .     STAFPL
               .           .          V
               .           .          V
259            .           .       RT08
               .           .          .
               .           .          .
262            .           .          .       HALE
               .           .          .          .
               .           .          .          .
278            .     HALEIN......................
               .           V
               .           V
281            .     HALEPL
               .           V
               .           V
288            .       RT09
               .           .
               .           .
291            .           .       HUNT
               .           .          .
               .           .          .
307       HWY26......................
               V
               V
310        RT10
               .
               .
313            .     MARILN
               .           .
               .           .
329       MRLIN............
               V
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              V
333      MRLNPL
              V
              V
339        RT11
              .
              .
342           .           ELLSBY
              .            .
              .            .
358      ELLSIN............
              V
              V
362      ELLSPL
              V
              V
369        RT12
              .
              .
372           .           HUGHES
              .            .
              .            .
388      HUGHIN............
              V
              V
392      HUGHPL
              V
              V
399        RT13
              .
              .
402           .           SH846B
              .            .
              .            .
418      SH846X............
              .
              .
422           .           CURRIE
              .            V
              .            V
438           .           CURDET
              .            V
              .            V
445           .             RT14
              .            .
              .            .
448           .            .           BLGRAV
              .            .            .
              .            .            .
464           .            BLGIN............
              .            V
              .            V
468           .           BLGRPL
              .            V
              .            V
475           .             RT15
              .            .
              .            .
478           .            .           WRIGHT
              .            .            V
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          .          .          V
494       .          .     WRGHTP
          .          .          V
          .          .          V
501       .          .       RT16
          .          .          .
          .          .          .
504       .          .          .         B18
          .          .          .          .
          .          .          .          .
520       .          .          .          .         B19
          .          .          .          .          .
          .          .          .          .          .
536       .     RAYLNG.................................
          .          V
          .          V
539       .       RT17
          .          .
          .          .
542       .          .     BATJER
          .          .          .
          .          .          .
558       .     BTJOUT............
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(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

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HEC1 S/N: 1090525070       HMVersion: 5.20    Data File: BRWN-ALT.HC1

****************************************                                              ****************************************
*                                      *                                              *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                              *   U.S. ARMY CORPS OF ENGINEERS       *
*            FEBRUARY 1981             *                                              * THE HYDROLOGIC ENGINEERING CENTER    *
*          REVISED 02 AUG 88           *                                              *         609 SECOND STREET            *
*                                      *                                              *      DAVIS, CALIFORNIA 95616         *
*  RUN DATE  09/14/1990  TIME  10:31:42 *                                             *                                      *
*                                      *                                              *                                      *
****************************************                                              ****************************************



                           MARTIN COUNTY FLOOD CONTROL STUDY     JOB NO. 06901-001-036
                           HDR ENGINEERING, INC.                 AUSTIN, TEXAS

                           BROWN AREA PROPOSED ALTERNATIVES

                           COMPUTING 2-YR, 5-YR, 10-YR, 25-YR, 50-YR, AND 100-YR FLOOD EVENTS
                           FOR BROWN AREA USING PLAN OPTION IN HEC-1.

                                   PLAN 1:   2-YEAR EVENT
                                   PLAN 2:   5-YEAR EVENT
                                   PLAN 3:  10-YEAR EVENT
                                   PLAN 4:  25-YEAR EVENT
                                   PLAN 5:  50-YEAR EVENT
                                   PLAN 6: 100-YEAR EVENT


 18 IO          OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                      NMIN           5  MINUTES IN COMPUTATION INTERVAL
                     IDATE      1    0  STARTING DATE
                     ITIME        0000  STARTING TIME
                        NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE      2    0  ENDING DATE
                    NDTIME        0055  ENDING TIME
                    ICENT           19  CENTURY MARK

                 COMPUTATION INTERVAL     .08 HOURS
                      TOTAL TIME BASE   24.92 HOURS

          ENGLISH UNITS
              DRAINAGE AREA         SQUARE MILES
              PRECIPITATION DEPTH   INCHES
              LENGTH, ELEVATION     FEET
              FLOW                  CUBIC FEET PER SECOND
              STORAGE VOLUME        ACRE-FEET
              SURFACE AREA          ACRES
              TEMPERATURE           DEGREES FAHRENHEIT
```

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO FLOWS RATIO 1 1.00
HYDROGRAPH AT	BECKMY	1.01	1	FLOW	106.
				TIME	13.08
			2	FLOW	308.
				TIME	13.00
			3	FLOW	459.
				TIME	13.00
			4	FLOW	625.
				TIME	13.00
			5	FLOW	786.
				TIME	12.92
			6	FLOW	946.
				TIME	12.92
ROUTED TO	BECKPL	1.01	1	FLOW	9.
				TIME	23.17
			2	FLOW	19.
				TIME	23.42
			3	FLOW	23.
				TIME	24.25
			4	FLOW	27.
				TIME	21.58
			5	FLOW	30.
				TIME	24.08
			6	FLOW	43.
				TIME	22.83
			** PEAK STAGES IN FEET **		
			1	STAGE	2755.57
				TIME	22.75
			2	STAGE	2756.54
				TIME	23.58
			3	STAGE	2757.35
				TIME	24.25
			4	STAGE	2758.21
				TIME	21.75
			5	STAGE	2759.15
				TIME	24.08
			6	STAGE	2760.03
				TIME	22.83
ROUTED TO	RT01	1.01	1	FLOW	9.
				TIME	23.50
			2	FLOW	19.
				TIME	23.83
			3	FLOW	23.
				TIME	24.58
			4	FLOW	27.
				TIME	21.92
			5	FLOW	30.

				TIME	24.42
			6	FLOW	43.
				TIME	23.17
HYDROGRAPH AT	MULLIN	1.94	1	FLOW	157.
				TIME	13.50
			2	FLOW	457.
				TIME	13.42
			3	FLOW	686.
				TIME	13.42
			4	FLOW	937.
				TIME	13.42
			5	FLOW	1174.
				TIME	13.33
			6	FLOW	1420.
				TIME	13.33
2 COMBINED AT	MULLIN	2.95	1	FLOW	157.
				TIME	13.50
			2	FLOW	463.
				TIME	13.42
			3	FLOW	697.
				TIME	13.42
			4	FLOW	953.
				TIME	13.42
			5	FLOW	1191.
				TIME	13.33
			6	FLOW	1440.
				TIME	13.33
ROUTED TO	MULLPL	2.95	1	FLOW	27.
				TIME	22.00
			2	FLOW	91.
				TIME	17.67
			3	FLOW	155.
				TIME	16.58
			4	FLOW	255.
				TIME	15.58
			5	FLOW	572.
				TIME	14.58
			6	FLOW	944.
				TIME	14.17
			** PEAK STAGES IN FEET **		
			1	STAGE	2736.49
				TIME	21.92
			2	STAGE	2738.33
				TIME	17.67
			3	STAGE	2739.75
				TIME	16.58
			4	STAGE	2740.61
				TIME	15.58
			5	STAGE	2740.92
				TIME	14.58
			6	STAGE	2741.16
				TIME	14.17
ROUTED TO	RT02	2.95	1	FLOW	27.
				TIME	22.33
			2	FLOW	91.

				TIME	17.92
			3	FLOW	154.
				TIME	16.75
			4	FLOW	255.
				TIME	15.75
			5	FLOW	572.
				TIME	14.75
			6	FLOW	941.
				TIME	14.33
HYDROGRAPH AT	COOK	.84	1	FLOW	79.
				TIME	13.25
			2	FLOW	230.
				TIME	13.17
			3	FLOW	344.
				TIME	13.17
			4	FLOW	469.
				TIME	13.08
			5	FLOW	590.
				TIME	13.08
			6	FLOW	712.
				TIME	13.08
2 COMBINED AT	CKOUT	3.79	1	FLOW	79.
				TIME	13.25
			2	FLOW	230.
				TIME	13.17
			3	FLOW	344.
				TIME	13.17
			4	FLOW	481.
				TIME	13.25
			5	FLOW	750.
				TIME	14.67
			6	FLOW	1248.
				TIME	14.25
ROUTED TO	RT03	3.79	1	FLOW	79.
				TIME	13.50
			2	FLOW	230.
				TIME	13.33
			3	FLOW	344.
				TIME	13.33
			4	FLOW	480.
				TIME	13.42
			5	FLOW	749.
				TIME	14.75
			6	FLOW	1247.
				TIME	14.33
HYDROGRAPH AT	BOND	.74	1	FLOW	68.
				TIME	13.25
			2	FLOW	199.
				TIME	13.17
			3	FLOW	297.
				TIME	13.17
			4	FLOW	406.
				TIME	13.17
			5	FLOW	509.
				TIME	13.17
			6	FLOW	613.

				TIME	13.17
2 COMBINED AT	BONDIN	4.53	1	FLOW	145.
				TIME	13.42
			2	FLOW	424.
				TIME	13.25
			3	FLOW	638.
				TIME	13.25
			4	FLOW	874.
				TIME	13.25
			5	FLOW	1113.
				TIME	13.25
			6	FLOW	1511.
				TIME	14.25
ROUTED TO	BONDLK	4.53	1	FLOW	12.
				TIME	24.92
			2	FLOW	22.
				TIME	24.92
			3	FLOW	139.
				TIME	24.58
			4	FLOW	254.
				TIME	19.58
			5	FLOW	465.
				TIME	16.58
			6	FLOW	902.
				TIME	15.42
			** PEAK STAGES IN FEET **		
			1	STAGE	2700.75
				TIME	24.92
			2	STAGE	2702.26
				TIME	24.92
			3	STAGE	2703.19
				TIME	24.50
			4	STAGE	2703.31
				TIME	19.58
			5	STAGE	2703.48
				TIME	16.58
			6	STAGE	2703.76
				TIME	15.42
ROUTED TO	RT04	4.53	1	FLOW	11.
				TIME	24.92
			2	FLOW	22.
				TIME	24.92
			3	FLOW	139.
				TIME	24.92
			4	FLOW	254.
				TIME	19.92
			5	FLOW	465.
				TIME	16.83
			6	FLOW	901.
				TIME	15.67
HYDROGRAPH AT	B5	2.00	1	FLOW	99.
				TIME	15.08
			2	FLOW	277.
				TIME	14.75
			3	FLOW	425.

				TIME	14.75
			4	FLOW	575.
				TIME	14.67
			5	FLOW	722.
				TIME	14.67
			6	FLOW	888.
				TIME	14.67
ROUTED TO	RT06	2.00	1	FLOW	99.
				TIME	15.25
			2	FLOW	277.
				TIME	14.92
			3	FLOW	425.
				TIME	14.83
			4	FLOW	574.
				TIME	14.75
			5	FLOW	722.
				TIME	14.75
			6	FLOW	887.
				TIME	14.75
HYDROGRAPH AT	B6	1.16	1	FLOW	97.
				TIME	13.42
			2	FLOW	282.
				TIME	13.33
			3	FLOW	423.
				TIME	13.33
			4	FLOW	578.
				TIME	13.33
			5	FLOW	723.
				TIME	13.33
			6	FLOW	874.
				TIME	13.25
2 COMBINED AT	LANGHM	3.16	1	FLOW	147.
				TIME	14.75
			2	FLOW	424.
				TIME	13.75
			3	FLOW	654.
				TIME	13.83
			4	FLOW	900.
				TIME	13.75
			5	FLOW	1132.
				TIME	13.75
			6	FLOW	1391.
				TIME	13.75
2 COMBINED AT	LANGIN	7.69	1	FLOW	147.
				TIME	14.75
			2	FLOW	424.
				TIME	13.75
			3	FLOW	654.
				TIME	13.83
			4	FLOW	900.
				TIME	13.75
			5	FLOW	1135.
				TIME	13.83
			6	FLOW	1942.
				TIME	15.42

ROUTED TO	LANGPL	7.69	1	FLOW	25.
				TIME	24.92
			2	FLOW	201.
				TIME	17.58
			3	FLOW	518.
				TIME	15.67
			4	FLOW	779.
				TIME	15.00
			5	FLOW	1053.
				TIME	14.58
			6	FLOW	1924.
				TIME	15.58
			** PEAK STAGES IN FEET **		
			1	STAGE	2672.72
				TIME	24.92
			2	STAGE	2675.25
				TIME	17.58
			3	STAGE	2675.51
				TIME	15.67
			4	STAGE	2675.68
				TIME	15.00
			5	STAGE	2675.84
				TIME	14.58
			6	STAGE	2676.28
				TIME	15.58
HYDROGRAPH AT	DRYWLS	.73	1	FLOW	65.
				TIME	13.33
			2	FLOW	188.
				TIME	13.25
			3	FLOW	282.
				TIME	13.25
			4	FLOW	385.
				TIME	13.25
			5	FLOW	482.
				TIME	13.17
			6	FLOW	582.
				TIME	13.17
2 COMBINED AT	DRYIN	8.42	1	FLOW	68.
				TIME	13.42
			2	FLOW	228.
				TIME	17.50
			3	FLOW	587.
				TIME	15.67
			4	FLOW	890.
				TIME	14.92
			5	FLOW	1244.
				TIME	14.50
			6	FLOW	2061.
				TIME	15.50
ROUTED TO	DRYWPL	8.42	1	FLOW	7.
				TIME	24.92
			2	FLOW	46.
				TIME	24.92
			3	FLOW	109.
				TIME	24.92
			4	FLOW	386.

				TIME	21.75
			5	FLOW	875.
				TIME	18.00
			6	FLOW	1671.
				TIME	16.42
			** PEAK STAGES IN FEET **		
			1	STAGE	2765.61
				TIME	24.92
			2	STAGE	2767.11
				TIME	24.92
			3	STAGE	2768.76
				TIME	24.92
			4	STAGE	2770.18
				TIME	21.67
			5	STAGE	2770.40
				TIME	18.00
			6	STAGE	2770.67
				TIME	16.42
HYDROGRAPH AT	DAVIS	1.34	1	FLOW	79.
				TIME	14.33
			2	FLOW	227.
				TIME	14.08
			3	FLOW	346.
				TIME	14.08
			4	FLOW	472.
				TIME	14.08
			5	FLOW	589.
				TIME	14.08
			6	FLOW	719.
				TIME	14.08
ROUTED TO	DAVPLY	1.34	1	FLOW	12.
				TIME	23.67
			2	FLOW	23.
				TIME	24.92
			3	FLOW	28.
				TIME	24.92
			4	FLOW	32.
				TIME	24.25
			5	FLOW	117.
				TIME	18.83
			6	FLOW	252.
				TIME	16.75
			** PEAK STAGES IN FEET **		
			1	STAGE	2760.81
				TIME	23.58
			2	STAGE	2762.29
				TIME	24.92
			3	STAGE	2763.49
				TIME	24.92
			4	STAGE	2764.74
				TIME	24.25
			5	STAGE	2765.15
				TIME	18.83
			6	STAGE	2765.29
				TIME	16.75

ROUTED TO	RT07	1.34	1	FLOW	12.
				TIME	24.75
			2	FLOW	22.
				TIME	24.92
			3	FLOW	28.
				TIME	24.92
			4	FLOW	32.
				TIME	24.83
			5	FLOW	117.
				TIME	19.33
			6	FLOW	251.
				TIME	17.17
HYDROGRAPH AT	STAFFD	.57	1	FLOW	54.
				TIME	13.25
			2	FLOW	157.
				TIME	13.17
			3	FLOW	235.
				TIME	13.08
			4	FLOW	321.
				TIME	13.08
			5	FLOW	404.
				TIME	13.08
			6	FLOW	486.
				TIME	13.08
ROUTED TO	STAFPL	.57	1	FLOW	8.
				TIME	17.92
			2	FLOW	17.
				TIME	18.33
			3	FLOW	22.
				TIME	18.08
			4	FLOW	26.
				TIME	19.25
			5	FLOW	29.
				TIME	19.58
			6	FLOW	32.
				TIME	19.92
			** PEAK STAGES IN FEET **		
			1	STAGE	2740.50
				TIME	17.83
			2	STAGE	2741.34
				TIME	18.33
			3	STAGE	2742.09
				TIME	18.08
			4	STAGE	2742.95
				TIME	19.33
			5	STAGE	2743.79
				TIME	19.50
			6	STAGE	2744.68
				TIME	19.83
ROUTED TO	RT08	.57	1	FLOW	8.
				TIME	18.75
			2	FLOW	17.
				TIME	19.00
			3	FLOW	22.
				TIME	18.58
			4	FLOW	26.

				TIME	19.75
			5	FLOW	29.
				TIME	19.92
			6	FLOW	32.
				TIME	20.33
HYDROGRAPH AT	HALE	1.15	1	FLOW	67.
				TIME	14.33
			2	FLOW	192.
				TIME	14.17
			3	FLOW	292.
				TIME	14.17
			4	FLOW	398.
				TIME	14.17
			5	FLOW	497.
				TIME	14.08
			6	FLOW	608.
				TIME	14.08
3 COMBINED AT	HALEIN	3.06	1	FLOW	70.
				TIME	14.50
			2	FLOW	203.
				TIME	14.25
			3	FLOW	309.
				TIME	14.17
			4	FLOW	417.
				TIME	14.17
			5	FLOW	523.
				TIME	14.33
			6	FLOW	645.
				TIME	14.17
ROUTED TO	HALEPL	3.06	1	FLOW	17.
				TIME	24.92
			2	FLOW	28.
				TIME	24.92
			3	FLOW	51.
				TIME	24.92
			4	FLOW	119.
				TIME	20.17
			5	FLOW	234.
				TIME	19.42
			6	FLOW	447.
				TIME	17.42
			** PEAK STAGES IN FEET **		
			1	STAGE	2701.30
				TIME	24.92
			2	STAGE	2703.56
				TIME	24.92
			3	STAGE	2705.05
				TIME	24.92
			4	STAGE	2705.15
				TIME	20.17
			5	STAGE	2705.28
				TIME	19.33
			6	STAGE	2705.46
				TIME	17.42
ROUTED TO	RT09	3.06	1	FLOW	17.

				TIME	24.92
			2	FLOW	28.
				TIME	24.92
			3	FLOW	44.
				TIME	24.92
			4	FLOW	119.
				TIME	20.50
			5	FLOW	234.
				TIME	19.67
			6	FLOW	446.
				TIME	17.67
HYDROGRAPH AT	HUNT	.93	1	FLOW	68.
				TIME	13.75
			2	FLOW	197.
				TIME	13.58
			3	FLOW	298.
				TIME	13.58
			4	FLOW	407.
				TIME	13.58
			5	FLOW	508.
				TIME	13.58
			6	FLOW	616.
				TIME	13.50
3 COMBINED AT	HWY26	12.41	1	FLOW	68.
				TIME	13.75
			2	FLOW	200.
				TIME	13.58
			3	FLOW	303.
				TIME	13.58
			4	FLOW	525.
				TIME	21.50
			5	FLOW	1150.
				TIME	17.92
			6	FLOW	2116.
				TIME	16.42
ROUTED TO	RT10	12.41	1	FLOW	68.
				TIME	14.00
			2	FLOW	199.
				TIME	13.83
			3	FLOW	303.
				TIME	13.75
			4	FLOW	525.
				TIME	21.67
			5	FLOW	1150.
				TIME	18.08
			6	FLOW	2115.
				TIME	16.50
HYDROGRAPH AT	MARILN	1.32	1	FLOW	168.
				TIME	12.83
			2	FLOW	483.
				TIME	12.75
			3	FLOW	719.
				TIME	12.75
			4	FLOW	978.
				TIME	12.75
			5	FLOW	1231.

				TIME	12.75
			6	FLOW	1477.
				TIME	12.75
2 COMBINED AT	MRLIN	13.73	1	FLOW	168.
				TIME	12.83
			2	FLOW	528.
				TIME	12.92
			3	FLOW	809.
				TIME	12.83
			4	FLOW	1119.
				TIME	12.83
			5	FLOW	1427.
				TIME	12.83
			6	FLOW	2231.
				TIME	16.50
ROUTED TO	MRLNPL	13.73	1	FLOW	10.
				TIME	24.92
			2	FLOW	20.
				TIME	24.92
			3	FLOW	25.
				TIME	24.92
			4	FLOW	545.
				TIME	22.33
			5	FLOW	1208.
				TIME	18.50
			6	FLOW	2168.
				TIME	16.92
			** PEAK STAGES IN FEET **		
			1	STAGE	2640.65
				TIME	24.92
			2	STAGE	2641.74
				TIME	24.92
			3	STAGE	2642.81
				TIME	24.92
			4	STAGE	2643.26
				TIME	22.33
			5	STAGE	2643.43
				TIME	18.50
			6	STAGE	2643.66
				TIME	16.92
ROUTED TO	RT11	13.73	1	FLOW	10.
				TIME	24.92
			2	FLOW	19.
				TIME	24.92
			3	FLOW	24.
				TIME	24.92
			4	FLOW	545.
				TIME	22.58
			5	FLOW	1208.
				TIME	18.75
			6	FLOW	2166.
				TIME	17.17
HYDROGRAPH AT	ELLSBY	2.28	1	FLOW	145.
				TIME	14.08
			2	FLOW	418.

				TIME	13.92
			3	FLOW	635.
				TIME	13.92
			4	FLOW	866.
				TIME	13.92
			5	FLOW	1082.
				TIME	13.83
			6	FLOW	1318.
				TIME	13.83
2 COMBINED AT	ELLSIN	16.01	1	FLOW	145.
				TIME	14.08
			2	FLOW	418.
				TIME	13.92
			3	FLOW	635.
				TIME	13.92
			4	FLOW	866.
				TIME	13.92
			5	FLOW	1400.
				TIME	18.67
			6	FLOW	2500.
				TIME	17.00
ROUTED TO	ELLSPL	16.01	1	FLOW	8.
				TIME	24.92
			2	FLOW	17.
				TIME	24.92
			3	FLOW	21.
				TIME	24.92
			4	FLOW	31.
				TIME	24.92
			5	FLOW	962.
				TIME	21.50
			6	FLOW	1950.
				TIME	18.50
			** PEAK STAGES IN FEET **		
			1	STAGE	2620.53
				TIME	24.92
			2	STAGE	2621.36
				TIME	24.92
			3	STAGE	2622.00
				TIME	24.92
			4	STAGE	2624.22
				TIME	24.92
			5	STAGE	2625.50
				TIME	21.42
			6	STAGE	2625.81
				TIME	18.50
ROUTED TO	RT12	16.01	1	FLOW	8.
				TIME	24.92
			2	FLOW	17.
				TIME	24.92
			3	FLOW	21.
				TIME	24.92
			4	FLOW	29.
				TIME	24.92
			5	FLOW	962.
				TIME	21.75

			6	FLOW	1948.
				TIME	18.75
HYDROGRAPH AT	HUGHES	2.05	1	FLOW	118.
				TIME	14.42
			2	FLOW	337.
				TIME	14.17
			3	FLOW	515.
				TIME	14.17
			4	FLOW	701.
				TIME	14.17
			5	FLOW	876.
				TIME	14.17
			6	FLOW	1071.
				TIME	14.17
2 COMBINED AT	HUGHIN	18.06	1	FLOW	118.
				TIME	14.42
			2	FLOW	337.
				TIME	14.17
			3	FLOW	515.
				TIME	14.17
			4	FLOW	701.
				TIME	14.17
			5	FLOW	1056.
				TIME	21.67
			6	FLOW	2149.
				TIME	18.67
ROUTED TO	HUGHPL	18.06	1	FLOW	20.
				TIME	24.92
			2	FLOW	34.
				TIME	24.92
			3	FLOW	36.
				TIME	24.92
			4	FLOW	145.
				TIME	19.92
			5	FLOW	970.
				TIME	22.67
			6	FLOW	1976.
				TIME	19.42
			** PEAK STAGES IN FEET **		
			1	STAGE	2591.77
				TIME	24.92
			2	STAGE	2595.06
				TIME	24.92
			3	STAGE	2595.83
				TIME	24.92
			4	STAGE	2596.17
				TIME	19.92
			5	STAGE	2596.80
				TIME	22.67
			6	STAGE	2597.29
				TIME	19.33
ROUTED TO	RT13	18.06	1	FLOW	20.
				TIME	24.92
			2	FLOW	34.
				TIME	24.92

			3	FLOW	36.
				TIME	24.92
			4	FLOW	145.
				TIME	20.17
			5	FLOW	970.
				TIME	22.83
			6	FLOW	1976.
				TIME	19.50
HYDROGRAPH AT	SH846B	.47	1	FLOW	46.
				TIME	13.17
			2	FLOW	134.
				TIME	13.08
			3	FLOW	200.
				TIME	13.08
			4	FLOW	273.
				TIME	13.08
			5	FLOW	342.
				TIME	13.08
			6	FLOW	411.
				TIME	13.00
2 COMBINED AT	SH846X	18.53	1	FLOW	46.
				TIME	13.17
			2	FLOW	134.
				TIME	13.08
			3	FLOW	200.
				TIME	13.08
			4	FLOW	273.
				TIME	13.08
			5	FLOW	986.
				TIME	22.83
			6	FLOW	2004.
				TIME	19.50
HYDROGRAPH AT	CURRIE	2.54	1	FLOW	108.
				TIME	15.92
			2	FLOW	296.
				TIME	15.50
			3	FLOW	454.
				TIME	15.50
			4	FLOW	607.
				TIME	15.42
			5	FLOW	768.
				TIME	15.42
			6	FLOW	949.
				TIME	15.42
ROUTED TO	CURDET	2.54	1	FLOW	23.
				TIME	24.92
			2	FLOW	28.
				TIME	24.92
			3	FLOW	32.
				TIME	24.92
			4	FLOW	135.
				TIME	22.08
			5	FLOW	308.
				TIME	19.33
			6	FLOW	515.
				TIME	18.00

			** PEAK STAGES IN FEET **		
			1	STAGE	2670.29
				TIME	24.92
			2	STAGE	2671.55
				TIME	24.92
			3	STAGE	2672.52
				TIME	24.92
			4	STAGE	2673.17
				TIME	22.00
			5	STAGE	2673.34
				TIME	19.33
			6	STAGE	2673.50
				TIME	18.00
ROUTED TO	RT14	2.54	1	FLOW	23.
				TIME	24.92
			2	FLOW	28.
				TIME	24.92
			3	FLOW	31.
				TIME	24.92
			4	FLOW	135.
				TIME	22.50
			5	FLOW	308.
				TIME	19.75
			6	FLOW	515.
				TIME	18.33
HYDROGRAPH AT	BLGRAV	1.90	1	FLOW	113.
				TIME	14.25
			2	FLOW	324.
				TIME	14.08
			3	FLOW	495.
				TIME	14.08
			4	FLOW	674.
				TIME	14.08
			5	FLOW	842.
				TIME	14.00
			6	FLOW	1027.
				TIME	14.00
2 COMBINED AT	BLGIN	4.44	1	FLOW	113.
				TIME	14.25
			2	FLOW	324.
				TIME	14.08
			3	FLOW	495.
				TIME	14.08
			4	FLOW	674.
				TIME	14.08
			5	FLOW	856.
				TIME	14.08
			6	FLOW	1046.
				TIME	14.08
ROUTED TO	BLGRPL	4.44	1	FLOW	25.
				TIME	24.92
			2	FLOW	35.
				TIME	24.92
			3	FLOW	38.
				TIME	24.92

			4	FLOW	182.
				TIME	23.17
			5	FLOW	419.
				TIME	20.17
			6	FLOW	682.
				TIME	18.67
			** PEAK STAGES IN FEET **		
			1	STAGE	2632.81
				TIME	24.92
			2	STAGE	2635.60
				TIME	24.92
			3	STAGE	2636.59
				TIME	24.92
			4	STAGE	2637.22
				TIME	23.17
			5	STAGE	2637.43
				TIME	20.17
			6	STAGE	2637.62
				TIME	18.67
ROUTED TO	RT15	4.44	1	FLOW	24.
				TIME	24.92
			2	FLOW	35.
				TIME	24.92
			3	FLOW	38.
				TIME	24.92
			4	FLOW	182.
				TIME	24.00
			5	FLOW	418.
				TIME	20.83
			6	FLOW	682.
				TIME	19.25
HYDROGRAPH AT	WRIGHT	.73	1	FLOW	88.
				TIME	12.92
			2	FLOW	255.
				TIME	12.83
			3	FLOW	378.
				TIME	12.83
			4	FLOW	515.
				TIME	12.83
			5	FLOW	648.
				TIME	12.75
			6	FLOW	780.
				TIME	12.75
ROUTED TO	WRGHTP	.73	1	FLOW	4.
				TIME	24.42
			2	FLOW	11.
				TIME	24.33
			3	FLOW	15.
				TIME	24.25
			4	FLOW	18.
				TIME	22.17
			5	FLOW	20.
				TIME	24.25
			6	FLOW	23.
				TIME	24.42

			** PEAK STAGES IN FEET **		
			1	STAGE	2622.29
				TIME	24.42
			2	STAGE	2622.74
				TIME	24.25
			3	STAGE	2623.08
				TIME	24.25
			4	STAGE	2623.46
				TIME	22.00
			5	STAGE	2623.88
				TIME	24.25
			6	STAGE	2624.33
				TIME	24.42
ROUTED TO	RT16	.73	1	FLOW	4.
				TIME	24.92
			2	FLOW	11.
				TIME	24.92
			3	FLOW	15.
				TIME	24.83
			4	FLOW	18.
				TIME	22.75
			5	FLOW	20.
				TIME	24.83
			6	FLOW	23.
				TIME	24.92
HYDROGRAPH AT	B18	1.95	1	FLOW	111.
				TIME	14.42
			2	FLOW	317.
				TIME	14.25
			3	FLOW	484.
				TIME	14.25
			4	FLOW	659.
				TIME	14.17
			5	FLOW	824.
				TIME	14.17
			6	FLOW	1008.
				TIME	14.17
HYDROGRAPH AT	B19	1.60	1	FLOW	143.
				TIME	13.33
			2	FLOW	418.
				TIME	13.25
			3	FLOW	625.
				TIME	13.25
			4	FLOW	854.
				TIME	13.17
			5	FLOW	1072.
				TIME	13.17
			6	FLOW	1293.
				TIME	13.17
4 COMBINED AT	RAYLNG	8.72	1	FLOW	218.
				TIME	13.58
			2	FLOW	635.
				TIME	13.50
			3	FLOW	962.
				TIME	13.50
			4	FLOW	1321.

				TIME	13.50
			5	FLOW	1656.
				TIME	13.42
			6	FLOW	2019.
				TIME	13.42
ROUTED TO	RT17	8.72	1	FLOW	218.
				TIME	13.75
			2	FLOW	634.
				TIME	13.58
			3	FLOW	961.
				TIME	13.58
			4	FLOW	1320.
				TIME	13.58
			5	FLOW	1654.
				TIME	13.50
			6	FLOW	2017.
				TIME	13.50
HYDROGRAPH AT	BATJER	.91	1	FLOW	84.
				TIME	13.25
			2	FLOW	244.
				TIME	13.17
			3	FLOW	366.
				TIME	13.17
			4	FLOW	500.
				TIME	13.17
			5	FLOW	625.
				TIME	13.17
			6	FLOW	754.
				TIME	13.17
2 COMBINED AT	BTJOUT	9.63	1	FLOW	289.
				TIME	13.58
			2	FLOW	848.
				TIME	13.50
			3	FLOW	1283.
				TIME	13.42
			4	FLOW	1763.
				TIME	13.42
			5	FLOW	2212.
				TIME	13.42
			6	FLOW	2692.
				TIME	13.42

*** NORMAL END OF HEC-1 ***
NORMAL END OF HEC-1

APPENDIX H

HEC1 S/N: 1090525070   HMVersion: 5.20   Data File: TL-EXST.HC1

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*****************************************                    ***************************************
*                                       *                    *                                     *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                    *   U.S. ARMY CORPS OF ENGINEERS      *
*             FEBRUARY 1981             *                    * THE HYDROLOGIC ENGINEERING CENTER   *
*           REVISED 02 AUG 88           *                    *         609 SECOND STREET           *
*                                       *                    *       DAVIS, CALIFORNIA 95616       *
*  RUN DATE  09/13/1990  TIME  11:36:44 *                    *                                     *
*                                       *                    *                                     *
*****************************************                    ***************************************
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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X               X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX         XXX
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::::::::::::::::::::::::::::::::::::::::
::::::::::::::::::::::::::::::::::::::::
:::                                  :::
:::  Full Microcomputer Implementation :::
:::               by                 :::
:::        Haestad Methods, Inc.     :::
:::                                  :::
::::::::::::::::::::::::::::::::::::::::
::::::::::::::::::::::::::::::::::::::::
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37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

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ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

*DIAGRAM
ID     MARTIN COUNTY FLOOD CONTROL STUDY     JOB NO. 06901-001-036
ID     HDR ENGINEERING, INC.                 AUSTIN, TEXAS
ID
ID     THREE LEAGUE ARE MAODEL TO HWY 137 CROSSING, EXISTING
ID
ID     COMPUTING 2-YR, 5-YR, 10-YR, 25-YR, 50-YR, AND 100-YR FLOOD EVENTS FOR
ID     THREE LEAGUE AREA USING PLAN OPTION IN HEC-1.
ID
ID                PLAN 1:   2-YEAR EVENT
ID                PLAN 2:   5-YEAR EVENT
ID                PLAN 3:  10-YEAR EVENT
ID                PLAN 4:  25-YEAR EVENT
ID                PLAN 5:  50-YEAR EVENT
ID                PLAN 6: 100-YEAR EVENT
ID
ID
IT      10                 300
IO       5       0
JP       6

KK     TL1
KM     RUNOFF HYDROGRAPH FOR TL1 SUBBASIN
PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
BA    4.65
LS       0      72
UD    1.11
KP       2
PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
KP       3
PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
KP       4
PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
KP       5
PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
KP       6
PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

KK     TL2
KM     RUNOFF HYDROGRAPH FOR TL2 SUBBASIN
PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
BA    1.04
LS       0      72
UD    0.87
KP       2
PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
KP       3
PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
KP       4
PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
KP       5
PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
KP       6
PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9
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LINE      ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  52      KK   KDRAW
  53      KM    COMBINE TL1 AND TL2
  54      HC       2

  55      KK     RT1
  56      KM    ROUTE KDRAW TO K2002
  57      RK   15600   .0035    .030            TRAP      50       8

  58      KK     TL3
  59      PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
  60      BA    3.11
  61      LS       0      72
  62      UD    0.62
  63      KP       2
  64      PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
  65      KP       3
  66      PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
  67      KP       4
  68      PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
  69      KP       5
  70      PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
  71      KP       6
  72      PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

  73      KK   K2002
  74      KM    COMBINE RT1 WITH TL3
  75      HC       2

  76      KK     TL7
  77      KM    RUNOFF HYDROGRAPH FOR TL7 SUBBASIN
  78      PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
  79      BA    3.39
  80      LS       0      72
  81      UD    0.65
  82      KP       2
  83      PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
  84      KP       3
  85      PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
  86      KP       4
  87      PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
  88      KP       5
  89      PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
  90      KP       6
  91      PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

  92      KK     TL8
  93      KM    RUNOFF HYDROGRAPH FOR TL8 SUBBASIN
  94      PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
  95      BA    0.55
  96      LS       0      72
  97      UD    0.28
  98      KP       2
  99      PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 100      KP       3
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LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 101           PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 102           KP       4
 103           PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 104           KP       5
 105           PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 106           KP       6
 107           PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 108           KK    829A
 109           KM    COMBINE TL7 AND TL8
 110           HC       2

 111           KK     RT2
 112           KM    ROUTE 829A TO 2002W
 113           RK    8200   .0052    .030            TRAP      20       6

 114           KK     TL9
 115           KM    RUNOFF HYDROGRAPH FOR TL9 SUBBASIN
 116           PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 117           BA    0.93
 118           LS       0      72
 119           UD    0.45
 120           KP       2
 121           PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 122           KP       3
 123           PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 124           KP       4
 125           PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 126           KP       5
 127           PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 128           KP       6
 129           PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 130           KK     RT3
 131           KM    ROUTE TL9 TO 2002W
 132           RK    4000   .0073    .030            TRAP      50       8

 133           KK    TL10
 134           KM    RUNOFF HYDROGRAPH FOR TL10 SUBBASIN
 135           PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 136           BA    0.96
 137           LS       0      72
 138           UD    0.38
 139           KP       2
 140           PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 141           KP       3
 142           PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 143           KP       4
 144           PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 145           KP       5
 146           PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 147           KP       6
 148           PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9
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LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 149           KK   2002W
 150           KM    COMBINE RT2 WITH RT3 AND TL10
 151           HC        3

 152           KK      RT4
 153           KM    ROUTE 2002W TO PXWEST
 154           RK   10000   .0052    .030             TRAP      50       8

 155           KK    TL12
 156           KM    RUNOFF HYDROGRAPH FOR TL12 SUBBASIN
 157           PH       50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 158           BA    1.60
 159           LS        0      72
 160           UD    0.96
 161           KP        2
 162           PH       20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 163           KP        3
 164           PH       10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 165           KP        4
 166           PH        4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 167           KP        5
 168           PH        2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 169           KP        6
 170           PH        1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 171           KK      RT5
 172           KM    ROUTE TL12 TO PXWEST
 173           RK    6600   .0064    .030             TRAP      50       8

 174           KK    TL13
 175           KM    RUNOFF HYDROGRAPH FOR TL13 SUBBASIN
 176           PH       50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 177           BA    3.99
 178           LS        0      72
 179           UD    1.23
 180           KP        2
 181           PH       20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 182           KP        3
 183           PH       10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 184           KP        4
 185           PH        4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 186           KP        5
 187           PH        2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 188           KP        6
 189           PH        1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 190           KK      RT6
 191           KM    ROUTE TL13 TO PXWEST
 192           RK    9600   .0052    .030             TRAP      50       8
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 193          KK    TL11
 194          KM    RUNOFF HYDROGRAPH FOR TL11 SUBBASIN
 195          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 196          BA    4.28
 197          LS       0      72
 198          UD    1.18
 199          KP       2
 200          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 201          KP       3
 202          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 203          KP       4
 204          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 205          KP       5
 206          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 207          KP       6
 208          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 209          KK  PXWEST
 210          KM    COMBINE RT5 WITH RT6 AND RT4
 211          HC       4

 212          KK    TL6A
 213          KM    RUNOFF HYDROGRAPH FOR TL6A SUBBASIN
 214          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 215          BA    2.53
 216          LS       0      72
 217          UD    0.86
 218          KP       2
 219          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 220          KP       3
 221          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 222          KP       4
 223          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 224          KP       5
 225          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 226          KP       6
 227          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 228          KK     RT7
 229          KM    ROUTE TL6A TO PXNW
 230          RK    9000   .0048    .030            TRAP      50       8

 231          KK    TL6B
 232          KM    RUNOFF HYDROGRAPH FOR TL6B SUBBASIN
 233          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 234          BA    0.85
 235          LS       0      72
 236          UD    0.46
 237          KP       2
 238          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 239          KP       3
 240          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 241          KP       4
 242          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 243          KP       5
 244          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 245          KP       6
 246          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 247          KK    PXNW
 248          KM    COMBINE RT7 WITH TL6B
 249          HC       2

 250          KK    TL4A
 251          KM    RUNOFF HYDROGRAPH FOR TL4A SUBBASIN
 252          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 253          BA    4.65
 254          LS       0      72
 255          UD    1.62
 256          KP       2
 257          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 258          KP       3
 259          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 260          KP       4
 261          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 262          KP       5
 263          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 264          KP       6
 265          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 266          KK     RT8
 267          KM    ROUTE TL4A TO PXNE
 268          RK    8400   .0045    .030            TRAP      50       8

 269          KK    TL4B
 270          KM    COMPUTE RUNOFF HYDROGRAPH FOR TL4B SUBBASIN
 271          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 272          BA    0.52
 273          LS       0      72
 274          UD    0.79
 275          KP       2
 276          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 277          KP       3
 278          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 279          KP       4
 280          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 281          KP       5
 282          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 283          KP       6
 284          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 285          KK    PXNE
 286          KM    COMBINE RT8 WITH TL4B
 287          HC       2
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 288          KK     TL5
 289          KM    RUNOFF HYDROGRAPH FOR TL5 SUBBASIN
 290          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 291          BA    1.88
 292          LS       0      72
 293          UD    0.52
 294          KP       2
 295          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 296          KP       3
 297          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 298          KP       4
 299          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 300          KP       5
 301          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 302          KP       6
 303          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 304          KK  PLAYAX
 305          KM    COMBINE K2002 - TL5 - PXNE - PXNW - PXWEST
 306          HC       5

 307          KK  TLPLAY
 308          KM    ROUTE INFLOW HYDROGRAPH THROUGH THREE LEAGUE PLAYA
 309          RS       1    ELEV    2725
 310          SV       0     362    1172    2679    5066
 311          SQ       0       0       0   15000  100000
 312          SE    2725    2730    2735    2740    2745

 313          KK     RT9
 314          KM    ROUTE TLPLAY OUTFLOW TO ALKRD
 315          RK    4000   .0030    .030            TRAP      20       6

 316          KK    TL14
 317          KM    RUNOFF HYDROGRAPH FOR TL14 SUBBASIN
 318          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 319          BA   12.70
 320          LS       0      72
 321          UD    1.29
 322          KP       2
 323          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 324          KP       3
 325          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 326          KP       4
 327          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 328          KP       5
 329          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 330          KP       6
 331          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 332         KK    RT10
 333         RK   12000   .0040    .030             TRAP      20       6

 334         KK    TL16
 335         KM    RUNOFF HYDROGRAPH FOR TL16 SUBBASIN
 336         PH      50    78.9    0.42     0.8     1.4      1.6     1.7     2.1     2.4     2.8
 337         BA    2.86
 338         LS       0      72
 339         UD    0.90
 340         KP       2
 341         PH      20    78.9    0.51     1.0     1.9      2.2     2.3     2.8     3.3     3.9
 342         KP       3
 343         PH      10    78.9    0.58     1.2     2.2      2.6     2.8     3.4     3.9     4.6
 344         KP       4
 345         PH       4    78.9    0.67     1.4     2.6      3.1     3.3     3.8     4.7     5.3
 346         KP       5
 347         PH       2    78.9    0.75     1.5     3.0      3.4     3.7     4.4     5.3     6.1
 348         KP       6
 349         PH       1    78.9    0.82     1.7     3.3      3.8     4.2     5.1     5.9     6.9

 350         KK   ALKRD
 351         KM    COMBINE RT9 WITH RT10 AND TL16
 352         HC       3

 353         KK    RT11
 354         KM    ROUTE ALKDRD TO ALKALI
 355         RK    5000   .0020    .030             TRAP      20       6

 356         KK    TL18
 357         KM    RUNOFF HYDROGRAPH FOR TL18 SUBBASIN
 358         PH      50    78.9    0.42     0.8     1.4      1.6     1.7     2.1     2.4     2.8
 359         BA    0.62
 360         LS       0      72
 361         UD    0.51
 362         KP       2
 363         PH      20    78.9    0.51     1.0     1.9      2.2     2.3     2.8     3.3     3.9
 364         KP       3
 365         PH      10    78.9    0.58     1.2     2.2      2.6     2.8     3.4     3.9     4.6
 366         KP       4
 367         PH       4    78.9    0.67     1.4     2.6      3.1     3.3     3.8     4.7     5.3
 368         KP       5
 369         PH       2    78.9    0.75     1.5     3.0      3.4     3.7     4.4     5.3     6.1
 370         KP       6
 371         PH       1    78.9    0.82     1.7     3.3      3.8     4.2     5.1     5.9     6.9

 372         KK    TL17
 373         KM    RUNOFF HYDROGRAPH FOR TL17 SUBBASIN
 374         PH      50    78.9    0.42     0.8     1.4      1.6     1.7     2.1     2.4     2.8
 375         BA    2.42
 376         LS       0      72
 377         UD    0.50
 378         KP       2
 379         PH      20    78.9    0.51     1.0     1.9      2.2     2.3     2.8     3.3     3.9
 380         KP       3
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 381          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 382          KP       4
 383          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 384          KP       5
 385          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 386          KP       6
 387          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 388          KK  ALKALI
 389          KM    COMBINE TL18 - RT12 - TL17 AND RT11
 390          HC       3

 391          KK  ALKLAK
 392          KM    ROUTE INFLOW HYDROGRAPH THROUGH ALKALI LAKE
 393          RS       1    ELEV    2708
 394          SV       0      77     346     813    1682    3130
 395          SQ       0       0       0       0   17000  100000
 396          SE    2708    2710    2715    2720    2725    2730

 397          KK   TL20E
 398          KM    RUNOFF HYDROGRAPH FOR TL20E SUBBASIN
 399          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 400          BA    1.53
 401          LS       0      72
 402          UD    2.00
 403          KP       2
 404          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 405          KP       3
 406          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 407          KP       4
 408          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 409          KP       5
 410          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 411          KP       6
 412          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 413          KK   SP1IN
 414          KM    COMBINE ALKLAK OUTFLOW HYDROGRAPH WITH SP1IN
 415          HC       2

 416          KK  SPILL1
 417          KM    ROUTE SP1IN INFLOW HYDROGRAPH THROUGH SPILL1 PLAYA
 418          RS       1    ELEV    2710
 419          SV       0     101     369     837    1495
 420          SQ       0       0       0   14000  100000
 421          SE    2710    2715    2720    2725    2730

 422          KK   TL20F
 423          KM    RUNOFF HYDROGRAPH FOR TL20F SUBBASIN
 424          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 425          BA    0.66
 426          LS       0      72
 427          UD    0.74
 428          KP       2
 429          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 430          KP       3
 431          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 432          KP       4
 433          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 434          KP       5
 435          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 436          KP       6
 437          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 438          KK   SP2IN
 439          KM    COMBINE SPILL1 OUTFLOW HYDROGRAPH WITH TL20F
 440          HC       2

 441          KK  SPILL2
 442          KM    ROUTE SP2IN INFLOW HYDROGRAPH THROUGH SPILL2 PLAYA
 443          RS       1    ELEV    2698
 444          SV       0      14      70     168     350     875
 445          SQ       0       0       0       0    5000  100000
 446          SE    2698    2700    2705    2710    2715    2720

 447          KK    TL19
 448          KM    RUNOFF HYDROGRAPH FOR TL19 SUBBASIN
 449          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 450          BA    4.73
 451          LS       0      72
 452          UD    2.37
 453          KP       2
 454          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 455          KP       3
 456          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 457          KP       4
 458          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 459          KP       5
 460          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 461          KP       6
 462          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 463          KK    RT13
 464          RK    2000   .0050   0.030            TRAP      50       8

 465          KK   TL20A
 466          KM    RUNOFF HYDROGRAPH FOR TL20A SUBBASIN
 467          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 468          BA    1.17
 469          LS       0      72
 470          UD    0.75
 471          KP       2
 472          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 473          KP       3
 474          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 475          KP       4
 476          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 477          KP       5
 478          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 479          KP       6
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 480          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 481          KK   TL1IN
 482          KM    COMBINE RT13 WITH TL20A
 483          HC       2

 484          KK  TL20-1
 485          KM    ROUTE TL1IN INFLOW HYDROGRAPH THROUGH TL20-1 PLAYA
 486          RS       1    ELEV    2755
 487          SV       0     351    1286    3240
 488          SQ       0       0       0  100000
 489          SE    2755    2760    2765    2770

 490          KK   TL20B
 491          KM    RUNOFF HYDROGRAPH FOR TL20B SUBBASIN
 492          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 493          BA    0.40
 494          LS       0      72
 495          UD    0.67
 496          KP       2
 497          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 498          KP       3
 499          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 500          KP       4
 501          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 502          KP       5
 503          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 504          KP       6
 505          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 506          KK   TL2IN
 507          KM    COMBINE TL20-1 OUTFLOW HYDROGRAPH WITH TL20B
 508          HC       2

 509          KK  TL20-2
 510          KM    ROUTE TL2IN INFLOW HYDROGRAPH THROUGH TL20-2 PLAYA
 511          RS       1    ELEV    2750
 512          SV       0      56     212     537
 513          SQ       0       0       0  100000
 514          SE    2750    2755    2760    2765

 515          KK    RT15
 516          KM    ROUTE TL20-2 TO TL3IN
 517          RK    6800   .0015    .030            TRAP      50       8

 518          KK   TL20C
 519          KM    RUNOFF HYDROGRAPH FOR TL20C SUBBASIN
 520          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 521          BA    3.48
 522          LS       0      72
 523          UD    0.67
 524          KP       2
 525          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 526          KP       3
 527          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 528          KP       4
 529          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 530          KP       5
 531          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 532          KP       6
 533          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 534          KK   TL3IN
 535          KM     COMBINE TL20-2 OUTFLOW HYDROGRAPH WITH TL20C
 536          HC       2

 537          KK  TL20-3
 538          KM     ROUTE TL3IN INFLOW HYDROGRAPH THROUGH TL20-3 PLAYA
 539          RS       1    ELEV    2740
 540          SV       0    1198    4620
 541          SQ       0       0  100000
 542          SE    2740    2745    2750

 543          KK    RT16
 544          KM     ROUTE TL20-3 OUTFLOW HYDROGRAPH TO TL4IN
 545          RK    8000   .0038   0.030            TRAP      50       8

 546          KK   TL20D
 547          KM     RUNOFF HYDROGRAPH FOR TL20D SUBBASIN
 548          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 549          BA    2.08
 550          LS       0      72
 551          UD    2.00
 552          KP       2
 553          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 554          KP       3
 555          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 556          KP       4
 557          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 558          KP       5
 559          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 560          KP       6
 561          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 562          KK   TL4IN
 563          KM     COMBINE TL20-3 OUTFLOW HYDROGRAPH WITH TL20D
 564          HC       2

 565          KK  TL20-4
 566          KM     ROUTE TL4IN INFLOW HYDROGRAPH THROUGH TL20-4 PLAYA
 567          RS       1    ELEV    2700
 568          SV       0     112     354     880    1929    3674
 569          SQ       0       0       0       0  100000  200000
 570          SE    2700    2705    2710    2715    2720    2725
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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 571        KK   TL20G
 572        KM    RUNOFF HYDROGRAPH FOR TL20G SUBBASIN
 573        PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 574        BA    0.41
 575        LS       0      72
 576        UD    1.00
 577        KP       2
 578        PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 579        KP       3
 580        PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 581        KP       4
 582        PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 583        KP       5
 584        PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 585        KP       6
 586        PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 587        KK    4OUT
 588        KM    COMBINE TL20G WITH TL20A AND SPILL2
 589        HC       3

 590        KK    RT14
 591        KM    ROUTE 4OUT TO HWY137 CROSSING
 592        RK    9400   .0050   0.030            TRAP      20       6

 593        KK   TL20H
 594        KM    RUNOFF HYDROGRAPH FOR TL20H SUBBASIN
 595        PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 596        BA    2.67
 597        LS       0      72
 598        UD    1.56
 599        KP       2
 600        PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 601        KP       3
 602        PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 603        KP       4
 604        PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 605        KP       5
 606        PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 607        KP       6
 608        PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 609        KK  HW137X
 610        KM    COMBINE RT14 WITH TL20H
 611        HC       2
 612        ZZ
```

```
                SCHEMATIC DIAGRAM OF STREAM NETWORK
INPUT
 LINE      (V) ROUTING         (--->) DIVERSION OR PUMP FLOW

  NO.      (.) CONNECTOR       (<---) RETURN OF DIVERTED OR PUMPED FLOW

  20          TL1
                .
                .
  36            .         TL2
                .           .
                .           .
  52        KDRAW............
                V
                V
  55          RT1
                .
                .
  58            .         TL3
                .           .
                .           .
  73        K2002............
                .
                .
  76            .         TL7
                .           .
                .           .
  92            .           .         TL8
                .           .           .
                .           .           .
 108            .        829A............
                .           V
                .           V
 111            .         RT2
                .           .
                .           .
 114            .           .         TL9
                .           .           V
                .           .           V
 130            .           .         RT3
                .           .           .
                .           .           .
 133            .           .           .        TL10
                .           .           .           .
                .           .           .           .
 149            .       2002W........................
                .           V
                .           V
 152            .         RT4
                .           .
                .           .
 155            .           .        TL12
                .           .           V
                .           .           V
 171            .           .         RT5
                .           .           .
                .           .           .
 174            .           .           .        TL13
                .           .           .           V
```

```
              .           .           .           V
190           .           .           .         RT6
              .           .           .           .
              .           .           .           .
193           .           .           .           .        TL11
              .           .           .           .           .
              .           .           .           .           .
209           .      PXWEST....................................
              .           .
              .           .
212           .           .        TL6A
              .           .           V
              .           .           V
228           .           .         RT7
              .           .           .
              .           .           .
231           .           .           .        TL6B
              .           .           .           .
              .           .           .           .
247           .           .        PXNW............
              .           .           .
              .           .           .
250           .           .           .        TL4A
              .           .           .           V
              .           .           .           V
266           .           .           .         RT8
              .           .           .           .
              .           .           .           .
269           .           .           .           .        TL4B
              .           .           .           .           .
              .           .           .           .           .
285           .           .           .        PXNE............
              .           .           .           .
              .           .           .           .
288           .           .           .           .         TL5
              .           .           .           .           .
              .           .           .           .           .
304      PLAYAX................................................
              V
              V
307      TLPLAY
              V
              V
313         RT9
              .
              .
316           .        TL14
              .           V
              .           V
332           .        RT10
              .           .
              .           .
334           .           .        TL16
              .           .           .
              .           .           .
350       ALKRD........................
              V
              V
353        RT11
              .
```

```
                  .
  356             .        TL18
                  .           .
                  .           .
  372             .           .         TL17
                  .           .            .
                  .           .            .
  388       ALKALI.............................
                  V
                  V
  391       ALKLAK
                  .
                  .
  397             .       TL20E
                  .           .
                  .           .
  413         SP1IN............
                  V
                  V
  416       SPILL1
                  .
                  .
  422             .       TL20F
                  .           .
                  .           .
  438         SP2IN............
                  V
                  V
  441       SPILL2
                  .
                  .
  447             .        TL19
                  .           V
                  .           V
  463             .        RT13
                  .           .
                  .           .
  465             .           .        TL20A
                  .           .            .
                  .           .            .
  481             .       TL1IN............
                  .           V
                  .           V
  484             .     TL20-1
                  .           .
                  .           .
  490             .           .        TL20B
                  .           .            .
                  .           .            .
  506             .       TL2IN............
                  .           V
                  .           V
  509             .     TL20-2
                  .           V
                  .           V
  515             .        RT15
                  .           .
                  .           .
  518             .           .        TL20C
                  .           .            .
```

```
                 .          .          .
 534             .        TL3IN............
                 .          V
                 .          V
 537             .       TL20-3
                 .          V
                 .          V
 543             .        RT16
                 .          .
                 .          .
 546             .          .        TL20D
                 .          .          .
                 .          .          .
 562             .        TL4IN............
                 .          V
                 .          V
 565             .       TL20-4
                 .          .
                 .          .
 571             .          .        TL20G
                 .          .          .
                 .          .          .
 587           4OUT........................
                 V
                 V
 590           RT14
                 .
                 .
 593             .        TL20H
                 .          .
                 .          .
 609         HW137X..........
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

HEC1 S/N: 1090525070   HMVersion: 5.20   Data File: TL-EXST.HC1

```
*****************************************                              ****************************************
*                                       *                              *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                              *   U.S. ARMY CORPS OF ENGINEERS       *
*             FEBRUARY 1981             *                              * THE HYDROLOGIC ENGINEERING CENTER    *
*           REVISED 02 AUG 88           *                              *         609 SECOND STREET            *
*                                       *                              *      DAVIS, CALIFORNIA 95616         *
*  RUN DATE  09/13/1990  TIME  11:36:44 *                              *                                      *
*                                       *                              *                                      *
*****************************************                              ****************************************
```

```
                    MARTIN COUNTY FLOOD CONTROL STUDY     JOB NO. 06901-001-036
                    HDR ENGINEERING, INC.                 AUSTIN, TEXAS

                    THREE LEAGUE ARE MADDEL TO HWY 137 CROSSING

                    COMPUTING 2-YR, 5-YR, 10-YR, 25-YR, 50-YR, AND 100-YR FLOOD EVENTS FOR
                    THREE LEAGUE AREA USING PLAN OPTION IN HEC-1.

                              PLAN 1:   2-YEAR EVENT
                              PLAN 2:   5-YEAR EVENT
                              PLAN 3:  10-YEAR EVENT
                              PLAN 4:  25-YEAR EVENT
                              PLAN 5:  50-YEAR EVENT
                              PLAN 6: 100-YEAR EVENT


  18 IO        OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE

    IT         HYDROGRAPH TIME DATA
                      NMIN          10  MINUTES IN COMPUTATION INTERVAL
                     IDATE      1    0  STARTING DATE
                     ITIME        0000  STARTING TIME
                        NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE      3    0  ENDING DATE
                    NDTIME        0150  ENDING TIME
                     ICENT          19  CENTURY MARK

                COMPUTATION INTERVAL     .17 HOURS
                     TOTAL TIME BASE   49.83 HOURS

          ENGLISH UNITS
              DRAINAGE AREA          SQUARE MILES
              PRECIPITATION DEPTH    INCHES
              LENGTH, ELEVATION      FEET
              FLOW                   CUBIC FEET PER SECOND
              STORAGE VOLUME         ACRE-FEET
              SURFACE AREA           ACRES
              TEMPERATURE            DEGREES FAHRENHEIT
```

```
JP          MULTI-PLAN OPTION
                  NPLAN          6  NUMBER OF PLANS

JR          MULTI-RATIO OPTION
                RATIOS OF RUNOFF
               1.00


   *** FLOGRD - MAXIMUM NUMBER OF DX INTERVALS REACHED. MDX= 51
    THIS MAY AFFECT ACCURACY OF KW  SOLUTION. TO REDUCE ERRORS SHORTEN CHANNEL ELEMENT = 3
```

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO FLOWS RATIO 1 1.00
HYDROGRAPH AT	TL1	4.65	1	FLOW	320.
				TIME	13.50
			2	FLOW	963.
				TIME	13.33
			3	FLOW	1458.
				TIME	13.33
			4	FLOW	2003.
				TIME	13.33
			5	FLOW	2506.
				TIME	13.33
			6	FLOW	3035.
				TIME	13.33
HYDROGRAPH AT	TL2	1.04	1	FLOW	83.
				TIME	13.17
			2	FLOW	249.
				TIME	13.17
			3	FLOW	375.
				TIME	13.00
			4	FLOW	515.
				TIME	13.00
			5	FLOW	651.
				TIME	13.00
			6	FLOW	786.
				TIME	13.00
2 COMBINED AT	KDRAW	5.69	1	FLOW	396.
				TIME	13.33
			2	FLOW	1198.
				TIME	13.33
			3	FLOW	1808.
				TIME	13.33
			4	FLOW	2481.
				TIME	13.33
			5	FLOW	3109.
				TIME	13.17
			6	FLOW	3768.
				TIME	13.17
ROUTED TO	RT1	5.69	1	FLOW	396.
				TIME	14.17
			2	FLOW	1188.
				TIME	13.83
			3	FLOW	1807.
				TIME	13.83
			4	FLOW	2470.
				TIME	13.67
			5	FLOW	3102.
				TIME	13.67

			6	FLOW	3752.
				TIME	13.67
HYDROGRAPH AT	TL3	3.11	1	FLOW	302.
				TIME	12.83
			2	FLOW	908.
				TIME	12.83
			3	FLOW	1353.
				TIME	12.83
			4	FLOW	1848.
				TIME	12.83
			5	FLOW	2331.
				TIME	12.83
			6	FLOW	2794.
				TIME	12.83
2 COMBINED AT	K2002	8.80	1	FLOW	514.
				TIME	14.17
			2	FLOW	1527.
				TIME	13.67
			3	FLOW	2403.
				TIME	13.67
			4	FLOW	3352.
				TIME	13.50
			5	FLOW	4201.
				TIME	13.50
			6	FLOW	5165.
				TIME	13.33
HYDROGRAPH AT	TL7	3.39	1	FLOW	319.
				TIME	13.00
			2	FLOW	966.
				TIME	12.83
			3	FLOW	1445.
				TIME	12.83
			4	FLOW	1977.
				TIME	12.83
			5	FLOW	2496.
				TIME	12.83
			6	FLOW	2998.
				TIME	12.83
HYDROGRAPH AT	TL8	.55	1	FLOW	77.
				TIME	12.50
			2	FLOW	221.
				TIME	12.50
			3	FLOW	333.
				TIME	12.33
			4	FLOW	456.
				TIME	12.33
			5	FLOW	568.
				TIME	12.33
			6	FLOW	689.
				TIME	12.33
2 COMBINED AT	829A	3.94	1	FLOW	368.
				TIME	12.83
			2	FLOW	1099.
				TIME	12.83
			3	FLOW	1636.

				TIME	12.83
			4	FLOW	2235.
				TIME	12.83
			5	FLOW	2839.
				TIME	12.67
			6	FLOW	3422.
				TIME	12.67
ROUTED TO	RT2	3.94	1	FLOW	367.
				TIME	13.17
			2	FLOW	1091.
				TIME	13.00
			3	FLOW	1633.
				TIME	13.00
			4	FLOW	2235.
				TIME	13.00
			5	FLOW	2833.
				TIME	12.83
			6	FLOW	3420.
				TIME	12.83
HYDROGRAPH AT	TL9	.93	1	FLOW	107.
				TIME	12.67
			2	FLOW	316.
				TIME	12.67
			3	FLOW	467.
				TIME	12.67
			4	FLOW	636.
				TIME	12.67
			5	FLOW	804.
				TIME	12.67
			6	FLOW	961.
				TIME	12.50
ROUTED TO	RT3	.93	1	FLOW	103.
				TIME	12.83
			2	FLOW	312.
				TIME	12.83
			3	FLOW	460.
				TIME	12.67
			4	FLOW	631.
				TIME	12.67
			5	FLOW	798.
				TIME	12.67
			6	FLOW	961.
				TIME	12.67
HYDROGRAPH AT	TL10	.96	1	FLOW	117.
				TIME	12.67
			2	FLOW	351.
				TIME	12.50
			3	FLOW	526.
				TIME	12.50
			4	FLOW	718.
				TIME	12.50
			5	FLOW	905.
				TIME	12.50
			6	FLOW	1088.
				TIME	12.50

3 COMBINED AT	2002W	5.83	1	FLOW	522.
				TIME	13.00
			2	FLOW	1604.
				TIME	12.83
			3	FLOW	2431.
				TIME	12.83
			4	FLOW	3349.
				TIME	12.83
			5	FLOW	4257.
				TIME	12.83
			6	FLOW	5105.
				TIME	12.83
ROUTED TO	RT4	5.83	1	FLOW	520.
				TIME	13.50
			2	FLOW	1596.
				TIME	13.17
			3	FLOW	2383.
				TIME	13.17
			4	FLOW	3308.
				TIME	13.00
			5	FLOW	4236.
				TIME	13.00
			6	FLOW	5101.
				TIME	13.00
HYDROGRAPH AT	TL12	1.60	1	FLOW	121.
				TIME	13.33
			2	FLOW	364.
				TIME	13.17
			3	FLOW	549.
				TIME	13.17
			4	FLOW	753.
				TIME	13.17
			5	FLOW	945.
				TIME	13.17
			6	FLOW	1141.
				TIME	13.17
ROUTED TO	RT5	1.60	1	FLOW	120.
				TIME	13.67
			2	FLOW	361.
				TIME	13.50
			3	FLOW	541.
				TIME	13.33
			4	FLOW	747.
				TIME	13.33
			5	FLOW	941.
				TIME	13.33
			6	FLOW	1139.
				TIME	13.33
HYDROGRAPH AT	TL13	3.99	1	FLOW	257.
				TIME	13.67
			2	FLOW	772.
				TIME	13.50
			3	FLOW	1171.
				TIME	13.50
			4	FLOW	1608.
				TIME	13.50

			5	FLOW	2007.
				TIME	13.50
			6	FLOW	2435.
				TIME	13.50
ROUTED TO	RT6	3.99	1	FLOW	256.
				TIME	14.17
			2	FLOW	771.
				TIME	13.83
			3	FLOW	1165.
				TIME	13.83
			4	FLOW	1597.
				TIME	13.67
			5	FLOW	2005.
				TIME	13.67
			6	FLOW	2435.
				TIME	13.67
HYDROGRAPH AT	TL11	4.28	1	FLOW	282.
				TIME	13.50
			2	FLOW	848.
				TIME	13.50
			3	FLOW	1284.
				TIME	13.50
			4	FLOW	1767.
				TIME	13.33
			5	FLOW	2220.
				TIME	13.33
			6	FLOW	2694.
				TIME	13.33
4 COMBINED AT	PXWEST	15.70	1	FLOW	1110.
				TIME	13.67
			2	FLOW	3325.
				TIME	13.33
			3	FLOW	5026.
				TIME	13.33
			4	FLOW	6882.
				TIME	13.33
			5	FLOW	8636.
				TIME	13.17
			6	FLOW	10459.
				TIME	13.17
HYDROGRAPH AT	TL6A	2.53	1	FLOW	204.
				TIME	13.17
			2	FLOW	609.
				TIME	13.00
			3	FLOW	920.
				TIME	13.00
			4	FLOW	1264.
				TIME	13.00
			5	FLOW	1596.
				TIME	13.00
			6	FLOW	1926.
				TIME	13.00
ROUTED TO	RT7	2.53	1	FLOW	204.
				TIME	13.67
			2	FLOW	609.

				TIME	13.50
			3	FLOW	918.
				TIME	13.33
			4	FLOW	1258.
				TIME	13.33
			5	FLOW	1576.
				TIME	13.33
			6	FLOW	1895.
				TIME	13.33
HYDROGRAPH AT	TL6B	.85	1	FLOW	97.
				TIME	12.67
			2	FLOW	287.
				TIME	12.67
			3	FLOW	424.
				TIME	12.67
			4	FLOW	578.
				TIME	12.67
			5	FLOW	731.
				TIME	12.67
			6	FLOW	873.
				TIME	12.67
2 COMBINED AT	PXNW	3.38	1	FLOW	239.
				TIME	13.67
			2	FLOW	733.
				TIME	13.33
			3	FLOW	1114.
				TIME	13.33
			4	FLOW	1543.
				TIME	13.17
			5	FLOW	1937.
				TIME	13.17
			6	FLOW	2351.
				TIME	13.17
HYDROGRAPH AT	TL4A	4.65	1	FLOW	250.
				TIME	14.17
			2	FLOW	741.
				TIME	14.00
			3	FLOW	1135.
				TIME	13.83
			4	FLOW	1560.
				TIME	13.83
			5	FLOW	1955.
				TIME	13.83
			6	FLOW	2388.
				TIME	13.83
ROUTED TO	RT8	4.65	1	FLOW	250.
				TIME	14.67
			2	FLOW	740.
				TIME	14.17
			3	FLOW	1135.
				TIME	14.17
			4	FLOW	1555.
				TIME	14.17
			5	FLOW	1943.
				TIME	14.17
			6	FLOW	2377.

				TIME	14.00
HYDROGRAPH AT	TL4B	.52	1	FLOW	44.
				TIME	13.17
			2	FLOW	133.
				TIME	13.00
			3	FLOW	199.
				TIME	13.00
			4	FLOW	273.
				TIME	13.00
			5	FLOW	343.
				TIME	13.00
			6	FLOW	413.
				TIME	13.00
2 COMBINED AT	PXNE	5.17	1	FLOW	269.
				TIME	14.50
			2	FLOW	793.
				TIME	14.17
			3	FLOW	1218.
				TIME	14.17
			4	FLOW	1664.
				TIME	14.00
			5	FLOW	2092.
				TIME	14.00
			6	FLOW	2563.
				TIME	14.00
HYDROGRAPH AT	TL5	1.88	1	FLOW	200.
				TIME	12.83
			2	FLOW	600.
				TIME	12.67
			3	FLOW	897.
				TIME	12.67
			4	FLOW	1226.
				TIME	12.67
			5	FLOW	1552.
				TIME	12.67
			6	FLOW	1863.
				TIME	12.67
5 COMBINED AT	PLAYAX	34.93	1	FLOW	2031.
				TIME	14.00
			2	FLOW	6331.
				TIME	13.50
			3	FLOW	9743.
				TIME	13.50
			4	FLOW	13577.
				TIME	13.33
			5	FLOW	17015.
				TIME	13.33
			6	FLOW	20725.
				TIME	13.17
ROUTED TO	TLPLAY	34.93	1	FLOW	0.
				TIME	.17
			2	FLOW	1432.
				TIME	17.67
			3	FLOW	3638.
				TIME	15.67

			4	FLOW	5958.
				TIME	15.00
			5	FLOW	8641.
				TIME	14.67
			6	FLOW	11643.
				TIME	14.67
			** PEAK STAGES IN FEET **		
			1	STAGE	2732.73
				TIME	49.67
			2	STAGE	2735.48
				TIME	17.67
			3	STAGE	2736.21
				TIME	15.67
			4	STAGE	2736.99
				TIME	15.00
			5	STAGE	2737.88
				TIME	14.67
			6	STAGE	2738.88
				TIME	14.67
ROUTED TO	RT9	34.93	1	FLOW	0.
				TIME	.17
			2	FLOW	1431.
				TIME	17.67
			3	FLOW	3635.
				TIME	15.83
			4	FLOW	5941.
				TIME	15.00
			5	FLOW	8641.
				TIME	14.83
			6	FLOW	11639.
				TIME	14.67
HYDROGRAPH AT	TL14	12.70	1	FLOW	793.
				TIME	13.67
			2	FLOW	2375.
				TIME	13.50
			3	FLOW	3617.
				TIME	13.50
			4	FLOW	4973.
				TIME	13.50
			5	FLOW	6226.
				TIME	13.50
			6	FLOW	7565.
				TIME	13.50
ROUTED TO	RT10	12.70	1	FLOW	789.
				TIME	14.17
			2	FLOW	2371.
				TIME	13.83
			3	FLOW	3600.
				TIME	13.83
			4	FLOW	4930.
				TIME	13.83
			5	FLOW	6190.
				TIME	13.67
			6	FLOW	7535.
				TIME	13.67

HYDROGRAPH AT	TL16	2.86	1	FLOW	224.
				TIME	13.17
			2	FLOW	675.
				TIME	13.17
			3	FLOW	1012.
				TIME	13.17
			4	FLOW	1387.
				TIME	13.17
			5	FLOW	1747.
				TIME	13.00
			6	FLOW	2113.
				TIME	13.00
3 COMBINED AT	ALKRD	50.49	1	FLOW	931.
				TIME	14.00
			2	FLOW	2810.
				TIME	13.67
			3	FLOW	5591.
				TIME	15.33
			4	FLOW	9536.
				TIME	14.50
			5	FLOW	13810.
				TIME	14.33
			6	FLOW	18519.
				TIME	14.17
ROUTED TO	RT11	50.49	1	FLOW	928.
				TIME	14.17
			2	FLOW	2809.
				TIME	13.83
			3	FLOW	5586.
				TIME	15.33
			4	FLOW	9500.
				TIME	14.67
			5	FLOW	13790.
				TIME	14.33
			6	FLOW	18431.
				TIME	14.17
HYDROGRAPH AT	TL18	.62	1	FLOW	66.
				TIME	12.83
			2	FLOW	200.
				TIME	12.67
			3	FLOW	299.
				TIME	12.67
			4	FLOW	408.
				TIME	12.67
			5	FLOW	516.
				TIME	12.67
			6	FLOW	619.
				TIME	12.67
HYDROGRAPH AT	TL17	2.42	1	FLOW	261.
				TIME	12.67
			2	FLOW	788.
				TIME	12.67
			3	FLOW	1175.
				TIME	12.67
			4	FLOW	1604.
				TIME	12.67

			5	FLOW	2030.
				TIME	12.67
			6	FLOW	2433.
				TIME	12.67
3 COMBINED AT	ALKALI	53.53	1	FLOW	1035.
				TIME	14.17
			2	FLOW	3070.
				TIME	13.83
			3	FLOW	5816.
				TIME	15.33
			4	FLOW	9817.
				TIME	14.50
			5	FLOW	14270.
				TIME	14.33
			6	FLOW	19114.
				TIME	14.17
ROUTED TO	ALKLAK	53.53	1	FLOW	0.
				TIME	.17
			2	FLOW	1967.
				TIME	18.83
			3	FLOW	5060.
				TIME	16.50
			4	FLOW	8294.
				TIME	15.67
			5	FLOW	12254.
				TIME	15.33
			6	FLOW	16651.
				TIME	15.00
			** PEAK STAGES IN FEET **		
			1	STAGE	2715.89
				TIME	43.33
			2	STAGE	2720.58
				TIME	18.83
			3	STAGE	2721.49
				TIME	16.50
			4	STAGE	2722.44
				TIME	15.67
			5	STAGE	2723.60
				TIME	15.33
			6	STAGE	2724.90
				TIME	15.00
HYDROGRAPH AT	TL20E	1.53	1	FLOW	72.
				TIME	14.67
			2	FLOW	210.
				TIME	14.33
			3	FLOW	325.
				TIME	14.33
			4	FLOW	443.
				TIME	14.33
			5	FLOW	556.
				TIME	14.33
			6	FLOW	682.
				TIME	14.33
2 COMBINED AT	SP1IN	55.06	1	FLOW	72.
				TIME	14.67

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 90           KK   CKOUT
 91           KM    COMBINE RT02 WITH COOK HYDROGRAPH TO GIVE TOTAL HYDROGRAPH AT COOK OUTLET
 92           HC        2

 93           KK    RT03
 94           KM    ROUTE COOK OUTFLOW HYDROGRAPH TO BOND LAKE
 95           RK    4000   .0037   0.030           TRAP      30       4

 96           KK    BOND
 97           KM    RUNOFF HYDROGRAPH FOR BOND LAKE SUBBBASIN
 98           PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 99           BA    0.74
100           LS       0      72
101           UD    1.00
102           KP       2
103           PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
104           KP       3
105           PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
106           KP       4
107           PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
108           KP       5
109           PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
110           KP       6
111           PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

112           KK  BONDIN
113           KM    COMBINE RT03 WITH BOND HYDROGRAPH TO GIVE INFLOW HYDROGRAPH TO BOND LAKE
114           HC       2

115           KK  BONDLK
116           KM    ROUTE BOND LAKE INFLOW HYDROGRAPH THROUGH BOND LAKE
117           RS       1    ELEV    2700
118           SV       0     342
119           SE    2700    2705
120           SS    2700     500     2.6     1.5

121           KK    RT04
122           KM    ROUTE BOND LAKE OUTFLOW HYDROGRAPH TO LANGHAM PLAYA
123           RK    5500   .0027   0.030           TRAP      30       4

124           KK      B5
125           KM    RUNOFF HYDROGRAPH FOR B5 SUBBASIN
126           PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
127           BA    2.00
128           LS       0      72
129           UD    2.40
130           KP       2
131           PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
132           KP       3
133           PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
134           KP       4
135           PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
136           KP       5
137           PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
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ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

KP       6
PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

KK    RT06
KM    ROUTE B5 RUNOFF HYDROGRAPH TO LANGHAM PLAYA
RK    5000   .0060   0.030            TRAP       5       1

KK      B6
KM    RUNOFF HYDROGRAPH FOR B6 SUBBASIN
PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
BA    1.16
LS       0      72
UD    1.15
KP       2
PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
KP       3
PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
KP       4
PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
KP       5
PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
KP       6
PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

KK  LANGHM
KM    COMBINE RT06 AND B6 HYDROGRAPHS TO GIVE LANGHAM SUBBASIN RUNOFF HYDROGRAPH
HC       2

KK  LANGIN
KM    COMBINE LANGHM AND RT04 HYDROGRAPH TO GIVE INFLOW HYDROGRAPH TO LANGHAM LAKE
HC       2

KK  LANGPL
KM    ROUTE LANGHAM PLAYA INFLOW HYDROGRAPH THROUGH LANGHAM PLAYA
RS       1    ELEV    2675
SV       0     114     228
SE    2670    2675    2680
SS    2675     500     2.6     1.5

KK  DRYWLS
KM    RUNOFF HYDROGRAPH FOR DRY WELLS SUBBASIN
PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
BA    0.73
LS       0      72
UD    1.06
KP       2
PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
KP       3
PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
KP       4
PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
KP       5
PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
KP       6
PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 187          KK   DRYIN
 188          KM    COMBINE LANGHAM PLAYA OUTFLOW HYDROGRAPH WITH DRY WELLS RUNOFF HYDROGRAPH
 189          KM    TO GIVE INFLOW HYDROGRAPH TO DRY WELLS PLAYA
 190          HC        2

 191          KK  DRYWPL
 192          KM    ROUTE DRY WELLS PLAYA INFLOW HYDROGRAPH THROUG DRY WELLS PLAYA
 193          RS        1    ELEV    2670
 194          SV        0      68     208     485     970
 195          SE     2755    2760    2765    2770    2775
 196          SS     2770    1000     2.6     1.5

 197          KK   DAVIS
 198          KM    RUNOFF HYDROGRAPH FOR DAVIS SUBBASIN
 199          PH       50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 200          BA     1.34
 201          LS        0      72
 202          UD     1.85
 203          KP        2
 204          PH       20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 205          KP        3
 206          PH       10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 207          KP        4
 208          PH        4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 209          KP        5
 210          PH        2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 211          KP        6
 212          PH        1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 213          KK  DAVPLY
 214          KM    ROUTE DAVIS RUNOFF HYDROGRAPH THROUGH DAVIS PLAYA
 215          RS        1    ELEV    2760
 216          SV        0      68     208     485
 217          SE     2755    2760    2765    2770
 218          SS     2760     500     2.6     1.5

 219          KK    RT07
 220          KM    ROUTE DAVIS PLAYA OUTFLOW HYDROGRAPH TO HALE PLAYA
 221          RK     9300   .0060   0.030            TRAP      30       4

 222          KK  STAFFD
 223          KM    RUNOFF HYDROGRAPH FOR STAFFORD SUBBASIN
 224          PH       50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 225          BA     0.57
 226          LS        0      72
 227          UD     0.96
 228          KP        2
 229          PH       20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 230          KP        3
 231          PH       10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 232          KP        4
 233          PH        4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 234          KP        5
 235          PH        2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 236          KP       6
 237          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 238          KK  STAFPL
 239          KM    ROUTE STAFFORD RUNOFF HYDROGRAPH THROUGH STAFFORD PLAYA
 240          RS       1    ELEV    2740
 241          SV       0      84     256
 242          SE    2740    2745    2750
 243          SS    2740     500     2.6     1.5

 244          KK    RT08
 245          KM    ROUTE STAFFORD PLAYA OUTFLOW HYDROGRAPH TO HALE PLAYA
 246          RK    5500   .0060   0.030            TRAP      30       4

 247          KK    HALE
 248          KM    RUNOFF HYDROGRAPH FOR HALE SUBBASIN
 249          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 250          BA    1.15
 251          LS       0      72
 252          UD    1.89
 253          KP       2
 254          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 255          KP       3
 256          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 257          KP       4
 258          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 259          KP       5
 260          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 261          KP       6
 262          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 263          KK  HALEIN
 264          KM    COMBINE HALE - RT07 - RT08 TO GIVE INFLOW HYDROGRAPH TO HALE PLAYA
 265          HC       3

 266          KK  HALEPL
 267          KM    ROUTE HALE INFLOW HYDROGRAPH THROUGH HALE PLAYA
 268          RS       1    ELEV    2700
 269          SV       0     114     386
 270          SE    2700    2705    2710
 271          SS    2700     500     2.6     1.5

 272          KK    RT09
 273          KM    ROUTE HALE PLAYA OUTFLOW HYDROGRAPH TO HWY 26 CROSSING
 274          RK    8000   .0056   0.030            TRAP       5       1

 275          KK    HUNT
 276          KM    RUNOFF HYDROGRAPH FOR HUNT SUBBASIN
 277          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 278          BA    0.93
 279          LS       0      72
 280          UD    1.38
 281          KP       2
 282          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 283          KP       3
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 284          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 285          KP       4
 286          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 287          KP       5
 288          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 289          KP       6
 290          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 291          KK   HWY26
 292          KM    COMBINE HYDROGRAPHS AT HWY 26 CROSSING
 293          HC       3

 294          KK    RT10
 295          KM    ROUTE HWY26 HYDROGRAPH TO MARILYN PLAYA
 296          RK    4000   .0037   0.030            TRAP      30       4

 297          KK  MARILN
 298          KM    RUNOFF HYDROGRAPH FOR MARILYN SUBBASIN
 299          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 300          BA    1.32
 301          LS       0      72
 302          UD    0.62
 303          KP       2
 304          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 305          KP       3
 306          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 307          KP       4
 308          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 309          KP       5
 310          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 311          KP       6
 312          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 313          KK   MRLIN
 314          KM    COMBINE RT10 WITH MARILN RUNOFF HYDROGRAPH TO GIVE INFLOW HYDROGRAPH INTO
 315          KM    MARILYN PLAYA
 316          HC       2

 317          KK  MRLNPL
 318          RS       1    ELEV    2640
 319          SV       0     122     602    1706
 320          SE    2635    2640    2645    2650
 321          SS    2640    1500     2.6     1.5

 322          KK    RT11
 323          KM    ROUTE MARILYN PLAYA OUTFLOW HYDORGRAPH TO COUNTY ROAD B1 CROSSING
 324          RK    7000   .0028   0.030            TRAP      30       4

 325          KK  ELLSBY
 326          KM    RUNOFF HYDROGRAPH FOR ELLSBERRY SUBBASIN
 327          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 328          BA    2.28
 329          LS       0      72
 330          UD    1.67
 331          KP       2
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 332          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 333          KP       3
 334          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 335          KP       4
 336          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 337          KP       5
 338          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 339          KP       6
 340          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 341          KK  ELLSIN
 342          KM    COMBINE ELLSBY RUNOFF HYDROGRAPH WITH RT11 TO GIVE HYDROGRAPH AT ELLSBERRY
 343          KM    PLAYA
 344          HC       2

 345          KK  ELLSPL
 346          KM    ROUTE ELLSBERRY INFLOW HYDROGRAPH THROUGH ELLSBERRY PLAYA
 347          RS       1    ELEV    2625
 348          SV       0     522    1044
 349          SE    2620    2625    2630
 350          SS    2625    1000     2.6     1.5

 351          KK    RT12
 352          KM    ROUTE COUNTY ROAD CROSSING HYDROGRAPH TO HUGHES PLAYA
 353          RK    8000   .0030   0.030            TRAP      30       4

 354          KK  HUGHES
 355          KM    RUNOFF HYDROGRAPH FOR HUGHES SUBBASIN
 356          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 357          BA    2.05
 358          LS       0      72
 359          UD    1.92
 360          KP       2
 361          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 362          KP       3
 363          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 364          KP       4
 365          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 366          KP       5
 367          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 368          KP       6
 369          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 370          KK  HUGHIN
 371          KM    COMBIE RT12 WITH HUGHES RUNOFF HYDROGRAPH TO GIVE INFLOW HYDROGRAPH INTO
 372          KM    HUGHES PLAYA
 373          HC       2

 374          KK  HUGHPL
 375          KM    ROUTE HUGHES PLAYA INFLOW HYDROGRAPH THROUGH HUGHES PLAYA
 376          RS       1    ELEV    2590
 377          SV       0     106     480    1328
 378          SE    2590    2595    2600    2605
 379          SS    2590     500     2.6     1.5
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 380          KK    RT13
 381          KM    ROUTE HUGHES PLAYA OUTFLOW HYDROGRAPH TO HWY 846 CROSSING
 382          RK    5500   .0030   0.030            TRAP      20       4

 383          KK  SH846B
 384          KM    RUNOFF HYDROGRAPH FOR S.H. 846 B SUBBASIN
 385          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 386          BA    0.47
 387          LS       0      72
 388          UD    0.92
 389          KP       2
 390          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 391          KP       3
 392          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 393          KP       4
 394          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 395          KP       5
 396          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 397          KP       6
 398          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 399          KK  SH846X
 400          KM    COMBINE RT13 WITH SH846B RUNOFF HYDROGRAPH TO GIVE HYDROGRAPH AT
 401          KM    S.H. 846 CROSSING WEST OF BATJER PLAYA
 402          HC       2

 403          KK  CURRIE
 404          KM    RUNOFF HYDROGRAPH FOR CURRIE SUBBASIN
 405          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 406          BA    2.54
 407          LS       0      72
 408          UD    3.03
 409          KP       2
 410          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 411          KP       3
 412          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 413          KP       4
 414          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 415          KP       5
 416          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 417          KP       6
 418          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 419          KK    RT14
 420          KM    ROUTE CURRIE RUNOFF HYDROGRAPH TO BLAGRAVE PLAYA
 421          RK    8000   .0038   0.030            TRAP      30       4

 422          KK  BLGRAV
 423          KM    RUNOFF HYDROGRAPH FOR BLAGRAVE SUBBASIN
 424          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 425          BA    1.90
 426          LS       0      72
 427          UD    1.83
 428          KP       2
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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 429            PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 430            KP       3
 431            PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 432            KP       4
 433            PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 434            KP       5
 435            PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 436            KP       6
 437            PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 438            KK   BLGIN
 439            KM    COMBINE RT14 HYDROGRAPH WITH BLGRAV HYDROGRAPH TO GIVE INFLOW HYDROGRAPH
 440            KM    FOR BLAGRAVE PLAYA
 441            HC       2

 442            KK  BLGRPL
 443            KM    ROUTE BLAGRAVE PLAYA INFLOW HYDROGRAPH THROUGH BLAGRAVE PLAYA
 444            RS       1    ELEV    2635
 445            SV       0      76     347
 446            SE    2630    2635    2640
 447            SS    2635     500     2.6     1.5

 448            KK    RT15
 449            KM    ROUTE BLAGRAVE PLAYA OUTFLOW HYDROGRAPH TO RAYLONG PLAYAS
 450            RK   14000   .0028   0.030            TRAP      30       4

 451            KK  WRIGHT
 452            KM    RUNOFF HYDROGRAPH FOR WRIGHT SUBBASIN
 453            PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 454            BA    0.73
 455            LS       0      72
 456            UD    0.67
 457            KP       2
 458            PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 459            KP       3
 460            PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 461            KP       4
 462            PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 463            KP       5
 464            PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 465            KP       6
 466            PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 467            KK  WRGHTP
 468            KM    ROUTE WRIGHT RUNOFF HYDROGRAPH THROUGH WRIGHT PLAYA
 469            RS       1    ELEV    2625
 470            SV       0      10      72     322     572
 471            SE    2613    2615    2620    2625    2630
 472            SS    2625     500     2.6     1.5
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 473          KK    RT16
 474          KM    ROUTE WRIGHT PLAYA OUTFLOW HYDROGRAPH TO RAYLONG PLAYAS
 475          RK    6000   .0050   0.030              TRAP       20       4

 476          KK     B18
 477          KM    RUNOFF HYDROGRAPH FOR B18 SUBBASIN
 478          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 479          BA    1.95
 480          LS       0      72
 481          UD    1.95
 482          KP       2
 483          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 484          KP       3
 485          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 486          KP       4
 487          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 488          KP       5
 489          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 490          KP       6
 491          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 492          KK     B19
 493          KM    RUNOFF HYDROGRAPH FOR B19 SUBBASIN
 494          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 495          BA    1.60
 496          LS       0      72
 497          UD    1.04
 498          KP       2
 499          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 500          KP       3
 501          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 502          KP       4
 503          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 504          KP       5
 505          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 506          KP       6
 507          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 508          KK  RAYLNG
 509          KM    COMBINE B18 - B19 - RT15 - RT16 TO GIVE INFLOW HYDROGRAPH TO RAYLONG PLAYAS
 510          HC       4

 511          KK    RT17
 512          KM    ROUTE RAYLONG HYDROGRAPH TO S.H. 846
 513          RK    4000   .0038   0.030              TRAP       10       4

 514          KK  BATJER
 515          KM    RUNOFF HYDROGRAPH FOR BATJER SUBBASIN
 516          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 517          BA    0.91
 518          LS       0      72
 519          UD    1.00
 520          KP       2
 521          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
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LINE	ID	1	2	3	4	5	6	7	8	9	10
522	KP	3									
523	PH	10	28.2	0.58	1.2	2.2	2.6	2.8	3.4	3.9	4.6
524	KP	4									
525	PH	4	28.2	0.67	1.4	2.6	3.1	3.3	3.8	4.7	5.3
526	KP	5									
527	PH	2	28.2	0.75	1.5	3.0	3.4	3.7	4.4	5.3	6.1
528	KP	6									
529	PH	1	28.2	0.82	1.7	3.3	3.8	4.2	5.1	5.9	6.9
530	KK	BTJOUT									
531	HC	2									
532	ZZ										

```
                SCHEMATIC DIAGRAM OF STREAM NETWORK
INPUT
 LINE      (V) ROUTING         (--->) DIVERSION OR PUMP FLOW

  NO.      (.) CONNECTOR       (<---) RETURN OF DIVERTED OR PUMPED FLOW

   20      BECKMY
                V
                V
   37      BECKPL
                V
                V
   43        RT01
                .
                .
   46           .      MULLIN
                .           .
                .           .
   62      MULLIN............
                V
                V
   65      MULLPL
                V
                V
   71        RT02
                .
                .
   74           .        COOK
                .           .
                .           .
   90       CKOUT............
                V
                V
   93        RT03
                .
                .
   96           .        BOND
                .           .
                .           .
  112      BONDIN............
                V
                V
  115      BONDLK
                V
                V
  121        RT04
                .
                .
  124           .          B5
                .           V
                .           V
  140           .        RT06
                .           .
                .           .
  143           .           .          B6
                .           .           .
                .           .           .
  159           .      LANGHM............
                .           .
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                  .              .
162         LANGIN............
                  V
                  V
165         LANGPL
                  .
                  .
171               .      DRYWLS
                  .              .
                  .              .
187          DRYIN............
                  V
                  V
191         DRYWPL
                  .
                  .
197               .       DAVIS
                  .              V
                  .              V
213               .      DAVPLY
                  .              V
                  .              V
219               .        RT07
                  .              .
                  .              .
222               .              .       STAFFD
                  .              .              V
                  .              .              V
238               .              .       STAFPL
                  .              .              V
                  .              .              V
244               .              .         RT08
                  .              .              .
                  .              .              .
247               .              .              .         HALE
                  .              .              .              .
                  .              .              .              .
263               .      HALEIN.......................
                  .              V
                  .              V
266               .      HALEPL
                  .              V
                  .              V
272               .        RT09
                  .              .
                  .              .
275               .              .         HUNT
                  .              .              .
                  .              .              .
291          HWY26.......................
                  V
                  V
294           RT10
                  .
                  .
297               .      MARILN
                  .              .
                  .              .
313          MRLIN............
                  V
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                 V
317         MRLNPL
                 V
                 V
322           RT11
                 .
                 .
325              .      ELLSBY
                 .           .
                 .           .
341         ELLSIN............
                 V
                 V
345         ELLSPL
                 V
                 V
351           RT12
                 .
                 .
354              .      HUGHES
                 .           .
                 .           .
370         HUGHIN............
                 V
                 V
374         HUGHPL
                 V
                 V
380           RT13
                 .
                 .
383              .      SH846B
                 .           .
                 .           .
399         SH846X............
                 .
                 .
403              .      CURRIE
                 .           V
                 .           V
419              .        RT14
                 .           .
                 .           .
422              .           .      BLGRAV
                 .           .           .
                 .           .           .
438              .       BLGIN............
                 .           V
                 .           V
442              .      BLGRPL
                 .           V
                 .           V
448              .        RT15
                 .           .
                 .           .
451              .           .      WRIGHT
                 .           .           V
                 .           .           V
467              .           .      WRGHTP
                 .           .           V
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             .           .           V
473          .           .         RT16
             .           .           .
             .           .           .
476          .           .           .          B18
             .           .           .           .
             .           .           .           .
492          .           .           .           .          B19
             .           .           .           .           .
             .           .           .           .           .
508          .     RAYLNG.................................
             .           V
             .           V
511          .       RT17
             .           .
             .           .
514          .           .      BATJER
             .           .           .
             .           .           .
530          .     BTJOUT............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
*****************************************                           *****************************************
*                                       *                           *                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                           *   U.S. ARMY CORPS OF ENGINEERS        *
*            FEBRUARY 1981              *                           * THE HYDROLOGIC ENGINEERING CENTER     *
*          REVISED 02 AUG 88            *                           *         609 SECOND STREET             *
*                                       *                           *       DAVIS, CALIFORNIA 95616         *
*  RUN DATE  09/14/1990  TIME  09:37:30 *                           *                                       *
*                                       *                           *                                       *
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                    MARTIN COUNTY FLOOD CONTROL STUDY      JOB NO. 06901-001-036
                    HDR ENGINEERING, INC.                  AUSTIN, TEXAS

                    BROWN AREA EXISTING CONDITIONS

                    COMPUTING 2-YR, 5-YR, 10-YR, 25-YR, 50-YR, AND 100-YR FLOOD EVENTS
                    FOR BROWN AREA USING PLAN OPTION IN HEC-1.

                              PLAN 1:   2-YEAR EVENT
                              PLAN 2:   5-YEAR EVENT
                              PLAN 3:  10-YEAR EVENT
                              PLAN 4:  25-YEAR EVENT
                              PLAN 5:  50-YEAR EVENT
                              PLAN 6: 100-YEAR EVENT


  18 IO          OUTPUT CONTROL VARIABLES
                       IPRNT          5  PRINT CONTROL
                       IPLOT          0  PLOT CONTROL
                       QSCAL         0.  HYDROGRAPH PLOT SCALE

     IT          HYDROGRAPH TIME DATA
                        NMIN          5  MINUTES IN COMPUTATION INTERVAL
                       IDATE      1   0  STARTING DATE
                       ITIME       0000  STARTING TIME
                          NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE      2   0  ENDING DATE
                      NDTIME       0055  ENDING TIME
                       ICENT         19  CENTURY MARK

                 COMPUTATION INTERVAL     .08 HOURS
                      TOTAL TIME BASE   24.92 HOURS

         ENGLISH UNITS
              DRAINAGE AREA          SQUARE MILES
              PRECIPITATION DEPTH    INCHES
              LENGTH, ELEVATION      FEET
              FLOW                   CUBIC FEET PER SECOND
              STORAGE VOLUME         ACRE-FEET
              SURFACE AREA           ACRES
              TEMPERATURE            DEGREES FAHRENHEIT
```

```
JP          MULTI-PLAN OPTION
                  NPLAN            6  NUMBER OF PLANS

JR          MULTI-RATIO OPTION
                RATIOS OF RUNOFF
               1.00
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PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO FLOWS RATIO 1 1.00
HYDROGRAPH AT	BECKMY	1.01	1	FLOW	106.
				TIME	13.08
			2	FLOW	308.
				TIME	13.00
			3	FLOW	459.
				TIME	13.00
			4	FLOW	625.
				TIME	13.00
			5	FLOW	786.
				TIME	12.92
			6	FLOW	946.
				TIME	12.92
ROUTED TO	BECKPL	1.01	1	FLOW	55.
				TIME	13.92
			2	FLOW	198.
				TIME	13.58
			3	FLOW	321.
				TIME	13.50
			4	FLOW	464.
				TIME	13.42
			5	FLOW	601.
				TIME	13.42
			6	FLOW	748.
				TIME	13.33
			** PEAK STAGES IN FEET **		
			1	STAGE	2760.12
				TIME	13.92
			2	STAGE	2760.28
				TIME	13.58
			3	STAGE	2760.39
				TIME	13.50
			4	STAGE	2760.50
				TIME	13.42
			5	STAGE	2760.60
				TIME	13.42
			6	STAGE	2760.69
				TIME	13.33
ROUTED TO	RT01	1.01	1	FLOW	54.
				TIME	14.25
			2	FLOW	198.
				TIME	13.83
			3	FLOW	320.
				TIME	13.67
			4	FLOW	464.
				TIME	13.58
			5	FLOW	600.

				TIME	13.50
			6	FLOW	747.
				TIME	13.50
HYDROGRAPH AT	MULLIN	1.94	1	FLOW	157.
				TIME	13.50
			2	FLOW	457.
				TIME	13.42
			3	FLOW	686.
				TIME	13.42
			4	FLOW	937.
				TIME	13.42
			5	FLOW	1174.
				TIME	13.33
			6	FLOW	1420.
				TIME	13.33
2 COMBINED AT	MULLIN	2.95	1	FLOW	198.
				TIME	13.67
			2	FLOW	633.
				TIME	13.58
			3	FLOW	986.
				TIME	13.50
			4	FLOW	1384.
				TIME	13.50
			5	FLOW	1757.
				TIME	13.42
			6	FLOW	2153.
				TIME	13.42
ROUTED TO	MULLPL	2.95	1	FLOW	172.
				TIME	14.17
			2	FLOW	587.
				TIME	13.83
			3	FLOW	935.
				TIME	13.75
			4	FLOW	1321.
				TIME	13.75
			5	FLOW	1686.
				TIME	13.67
			6	FLOW	2081.
				TIME	13.58
			** PEAK STAGES IN FEET **		
			1	STAGE	2740.26
				TIME	14.17
			2	STAGE	2740.59
				TIME	13.83
			3	STAGE	2740.80
				TIME	13.75
			4	STAGE	2741.01
				TIME	13.75
			5	STAGE	2741.19
				TIME	13.67
			6	STAGE	2741.36
				TIME	13.58
ROUTED TO	RT02	2.95	1	FLOW	172.
				TIME	14.33
			2	FLOW	587.

				TIME	14.00
			3	FLOW	933.
				TIME	13.92
			4	FLOW	1321.
				TIME	13.83
			5	FLOW	1686.
				TIME	13.75
			6	FLOW	2080.
				TIME	13.67
HYDROGRAPH AT	COOK	.84	1	FLOW	79.
				TIME	13.25
			2	FLOW	230.
				TIME	13.17
			3	FLOW	344.
				TIME	13.17
			4	FLOW	469.
				TIME	13.08
			5	FLOW	590.
				TIME	13.08
			6	FLOW	712.
				TIME	13.08
2 COMBINED AT	CKOUT	3.79	1	FLOW	212.
				TIME	14.25
			2	FLOW	720.
				TIME	13.83
			3	FLOW	1158.
				TIME	13.75
			4	FLOW	1645.
				TIME	13.67
			5	FLOW	2109.
				TIME	13.58
			6	FLOW	2614.
				TIME	13.58
ROUTED TO	RT03	3.79	1	FLOW	212.
				TIME	14.50
			2	FLOW	720.
				TIME	14.00
			3	FLOW	1156.
				TIME	13.92
			4	FLOW	1641.
				TIME	13.75
			5	FLOW	2107.
				TIME	13.67
			6	FLOW	2613.
				TIME	13.67
HYDROGRAPH AT	BOND	.74	1	FLOW	68.
				TIME	13.25
			2	FLOW	199.
				TIME	13.17
			3	FLOW	297.
				TIME	13.17
			4	FLOW	406.
				TIME	13.17
			5	FLOW	509.
				TIME	13.17
			6	FLOW	613.

				TIME	13.17
2 COMBINED AT	BONDIN	4.53	1	FLOW	247.
				TIME	14.42
			2	FLOW	838.
				TIME	13.92
			3	FLOW	1357.
				TIME	13.75
			4	FLOW	1938.
				TIME	13.67
			5	FLOW	2493.
				TIME	13.58
			6	FLOW	3097.
				TIME	13.58
ROUTED TO	BONDLK	4.53	1	FLOW	202.
				TIME	15.42
			2	FLOW	703.
				TIME	14.50
			3	FLOW	1173.
				TIME	14.33
			4	FLOW	1700.
				TIME	14.17
			5	FLOW	2217.
				TIME	14.00
			6	FLOW	2792.
				TIME	14.00
			** PEAK STAGES IN FEET **		
			1	STAGE	2700.29
				TIME	15.42
			2	STAGE	2700.66
				TIME	14.50
			3	STAGE	2700.93
				TIME	14.33
			4	STAGE	2701.19
				TIME	14.17
			5	STAGE	2701.42
				TIME	14.00
			6	STAGE	2701.66
				TIME	14.00
ROUTED TO	RT04	4.53	1	FLOW	202.
				TIME	15.75
			2	FLOW	702.
				TIME	14.67
			3	FLOW	1173.
				TIME	14.50
			4	FLOW	1699.
				TIME	14.33
			5	FLOW	2217.
				TIME	14.17
			6	FLOW	2792.
				TIME	14.08
HYDROGRAPH AT	B5	2.00	1	FLOW	99.
				TIME	15.08
			2	FLOW	277.
				TIME	14.75
			3	FLOW	425.

				TIME	14.75
			4	FLOW	575.
				TIME	14.67
			5	FLOW	722.
				TIME	14.67
			6	FLOW	888.
				TIME	14.67
ROUTED TO	RT06	2.00	1	FLOW	99.
				TIME	15.25
			2	FLOW	277.
				TIME	14.92
			3	FLOW	425.
				TIME	14.83
			4	FLOW	574.
				TIME	14.75
			5	FLOW	722.
				TIME	14.75
			6	FLOW	887.
				TIME	14.75
HYDROGRAPH AT	B6	1.16	1	FLOW	97.
				TIME	13.42
			2	FLOW	282.
				TIME	13.33
			3	FLOW	423.
				TIME	13.33
			4	FLOW	578.
				TIME	13.33
			5	FLOW	723.
				TIME	13.33
			6	FLOW	874.
				TIME	13.25
2 COMBINED AT	LANGHM	3.16	1	FLOW	147.
				TIME	14.75
			2	FLOW	424.
				TIME	13.75
			3	FLOW	654.
				TIME	13.83
			4	FLOW	900.
				TIME	13.75
			5	FLOW	1132.
				TIME	13.75
			6	FLOW	1391.
				TIME	13.75
2 COMBINED AT	LANGIN	7.69	1	FLOW	339.
				TIME	15.50
			2	FLOW	1100.
				TIME	14.67
			3	FLOW	1799.
				TIME	14.42
			4	FLOW	2556.
				TIME	14.25
			5	FLOW	3306.
				TIME	14.17
			6	FLOW	4146.
				TIME	14.08

ROUTED TO	LANGPL	7.69	1	FLOW	336.
				TIME	15.75
			2	FLOW	1091.
				TIME	14.83
			3	FLOW	1785.
				TIME	14.58
			4	FLOW	2538.
				TIME	14.42
			5	FLOW	3286.
				TIME	14.25
			6	FLOW	4123.
				TIME	14.17
			** PEAK STAGES IN FEET **		
			1	STAGE	2675.40
				TIME	15.75
			2	STAGE	2675.89
				TIME	14.83
			3	STAGE	2676.23
				TIME	14.58
			4	STAGE	2676.56
				TIME	14.42
			5	STAGE	2676.85
				TIME	14.25
			6	STAGE	2677.16
				TIME	14.17
HYDROGRAPH AT	DRYWLS	.73	1	FLOW	65.
				TIME	13.33
			2	FLOW	188.
				TIME	13.25
			3	FLOW	282.
				TIME	13.25
			4	FLOW	385.
				TIME	13.25
			5	FLOW	482.
				TIME	13.17
			6	FLOW	582.
				TIME	13.17
2 COMBINED AT	DRYIN	8.42	1	FLOW	358.
				TIME	15.67
			2	FLOW	1158.
				TIME	14.75
			3	FLOW	1904.
				TIME	14.50
			4	FLOW	2713.
				TIME	14.33
			5	FLOW	3522.
				TIME	14.17
			6	FLOW	4437.
				TIME	14.08
ROUTED TO	DRYWPL	8.42	1	FLOW	0.
				TIME	.08
			2	FLOW	62.
				TIME	24.92
			3	FLOW	541.
				TIME	18.42
			4	FLOW	1231.

				TIME	16.58
			5	FLOW	2161.
				TIME	15.75
			6	FLOW	3234.
				TIME	15.25
			** PEAK STAGES IN FEET **		
			1	STAGE	2764.18
				TIME	24.92
			2	STAGE	2770.08
				TIME	24.92
			3	STAGE	2770.35
				TIME	18.42
			4	STAGE	2770.60
				TIME	16.58
			5	STAGE	2770.88
				TIME	15.75
			6	STAGE	2771.15
				TIME	15.25
HYDROGRAPH AT	DAVIS	1.34	1	FLOW	79.
				TIME	14.33
			2	FLOW	227.
				TIME	14.08
			3	FLOW	346.
				TIME	14.08
			4	FLOW	472.
				TIME	14.08
			5	FLOW	589.
				TIME	14.08
			6	FLOW	719.
				TIME	14.08
ROUTED TO	DAVPLY	1.34	1	FLOW	74.
				TIME	14.83
			2	FLOW	217.
				TIME	14.50
			3	FLOW	334.
				TIME	14.42
			4	FLOW	456.
				TIME	14.33
			5	FLOW	576.
				TIME	14.33
			6	FLOW	705.
				TIME	14.25
			** PEAK STAGES IN FEET **		
			1	STAGE	2760.14
				TIME	14.83
			2	STAGE	2760.30
				TIME	14.50
			3	STAGE	2760.40
				TIME	14.42
			4	STAGE	2760.50
				TIME	14.33
			5	STAGE	2760.57
				TIME	14.25
			6	STAGE	2760.66
				TIME	14.25

ROUTED TO	RT07	1.34	1	FLOW	74.
				TIME	15.42
			2	FLOW	217.
				TIME	14.92
			3	FLOW	334.
				TIME	14.75
			4	FLOW	456.
				TIME	14.67
			5	FLOW	576.
				TIME	14.58
			6	FLOW	705.
				TIME	14.58
HYDROGRAPH AT	STAFFD	.57	1	FLOW	54.
				TIME	13.25
			2	FLOW	157.
				TIME	13.17
			3	FLOW	235.
				TIME	13.08
			4	FLOW	321.
				TIME	13.08
			5	FLOW	404.
				TIME	13.08
			6	FLOW	486.
				TIME	13.08
ROUTED TO	STAFPL	.57	1	FLOW	46.
				TIME	13.58
			2	FLOW	146.
				TIME	13.42
			3	FLOW	224.
				TIME	13.33
			4	FLOW	309.
				TIME	13.33
			5	FLOW	388.
				TIME	13.25
			6	FLOW	471.
				TIME	13.25
			** PEAK STAGES IN FEET **		
			1	STAGE	2740.10
				TIME	13.58
			2	STAGE	2740.23
				TIME	13.42
			3	STAGE	2740.31
				TIME	13.33
			4	STAGE	2740.38
				TIME	13.33
			5	STAGE	2740.44
				TIME	13.25
			6	STAGE	2740.51
				TIME	13.25
ROUTED TO	RT08	.57	1	FLOW	46.
				TIME	14.00
			2	FLOW	146.
				TIME	13.67
			3	FLOW	224.
				TIME	13.58
			4	FLOW	308.

				TIME	13.50
			5	FLOW	386.
				TIME	13.50
			6	FLOW	470.
				TIME	13.42
HYDROGRAPH AT	HALE	1.15	1	FLOW	67.
				TIME	14.33
			2	FLOW	192.
				TIME	14.17
			3	FLOW	292.
				TIME	14.17
			4	FLOW	398.
				TIME	14.17
			5	FLOW	497.
				TIME	14.08
			6	FLOW	608.
				TIME	14.08
3 COMBINED AT	HALEIN	3.06	1	FLOW	159.
				TIME	15.00
			2	FLOW	471.
				TIME	14.50
			3	FLOW	742.
				TIME	14.33
			4	FLOW	1010.
				TIME	14.25
			5	FLOW	1279.
				TIME	14.17
			6	FLOW	1574.
				TIME	14.17
ROUTED TO	HALEPL	3.06	1	FLOW	153.
				TIME	15.33
			2	FLOW	464.
				TIME	14.75
			3	FLOW	733.
				TIME	14.58
			4	FLOW	1003.
				TIME	14.42
			5	FLOW	1269.
				TIME	14.33
			6	FLOW	1564.
				TIME	14.25
			** PEAK STAGES IN FEET **		
			1	STAGE	2700.24
				TIME	15.33
			2	STAGE	2700.50
				TIME	14.67
			3	STAGE	2700.68
				TIME	14.58
			4	STAGE	2700.84
				TIME	14.42
			5	STAGE	2700.98
				TIME	14.33
			6	STAGE	2701.13
				TIME	14.25
ROUTED TO	RT09	3.06	1	FLOW	153.

				TIME	15.67
			2	FLOW	464.
				TIME	14.92
			3	FLOW	733.
				TIME	14.75
			4	FLOW	1002.
				TIME	14.58
			5	FLOW	1268.
				TIME	14.50
			6	FLOW	1563.
				TIME	14.42
HYDROGRAPH AT	HUNT	.93	1	FLOW	68.
				TIME	13.75
			2	FLOW	197.
				TIME	13.58
			3	FLOW	298.
				TIME	13.58
			4	FLOW	407.
				TIME	13.58
			5	FLOW	508.
				TIME	13.58
			6	FLOW	616.
				TIME	13.50
3 COMBINED AT	HWY26	12.41	1	FLOW	189.
				TIME	15.50
			2	FLOW	572.
				TIME	14.75
			3	FLOW	921.
				TIME	14.50
			4	FLOW	1847.
				TIME	16.42
			5	FLOW	3264.
				TIME	15.58
			6	FLOW	4876.
				TIME	15.08
ROUTED TO	RT10	12.41	1	FLOW	188.
				TIME	15.75
			2	FLOW	572.
				TIME	14.92
			3	FLOW	921.
				TIME	14.58
			4	FLOW	1846.
				TIME	16.50
			5	FLOW	3263.
				TIME	15.67
			6	FLOW	4876.
				TIME	15.17
HYDROGRAPH AT	MARILN	1.32	1	FLOW	168.
				TIME	12.83
			2	FLOW	483.
				TIME	12.75
			3	FLOW	719.
				TIME	12.75
			4	FLOW	978.
				TIME	12.75
			5	FLOW	1231.

				TIME	12.75
			6	FLOW	1477.
				TIME	12.75
2 COMBINED AT	MRLIN	13.73	1	FLOW	221.
				TIME	15.50
			2	FLOW	660.
				TIME	14.75
			3	FLOW	1061.
				TIME	14.50
			4	FLOW	1952.
				TIME	16.50
			5	FLOW	3399.
				TIME	15.67
			6	FLOW	5082.
				TIME	15.17
ROUTED TO	MRLNPL	13.73	1	FLOW	211.
				TIME	16.00
			2	FLOW	640.
				TIME	15.17
			3	FLOW	1031.
				TIME	14.83
			4	FLOW	1890.
				TIME	16.83
			5	FLOW	3285.
				TIME	15.92
			6	FLOW	4926.
				TIME	15.42
			** PEAK STAGES IN FEET **		
			1	STAGE	2640.14
				TIME	15.92
			2	STAGE	2640.30
				TIME	15.17
			3	STAGE	2640.40
				TIME	14.83
			4	STAGE	2640.61
				TIME	16.83
			5	STAGE	2640.88
				TIME	15.92
			6	STAGE	2641.16
				TIME	15.42
ROUTED TO	RT11	13.73	1	FLOW	211.
				TIME	16.42
			2	FLOW	639.
				TIME	15.42
			3	FLOW	1031.
				TIME	15.08
			4	FLOW	1889.
				TIME	17.00
			5	FLOW	3284.
				TIME	16.08
			6	FLOW	4919.
				TIME	15.58
HYDROGRAPH AT	ELLSBY	2.28	1	FLOW	145.
				TIME	14.08
			2	FLOW	418.

				TIME	13.92
			3	FLOW	635.
				TIME	13.92
			4	FLOW	866.
				TIME	13.92
			5	FLOW	1082.
				TIME	13.83
			6	FLOW	1318.
				TIME	13.83
2 COMBINED AT	ELLSIN	16.01	1	FLOW	288.
				TIME	16.08
			2	FLOW	889.
				TIME	15.08
			3	FLOW	1495.
				TIME	14.67
			4	FLOW	2128.
				TIME	17.00
			5	FLOW	3701.
				TIME	16.00
			6	FLOW	5585.
				TIME	15.50
ROUTED TO	ELLSPL	16.01	1	FLOW	273.
				TIME	16.75
			2	FLOW	866.
				TIME	15.50
			3	FLOW	1446.
				TIME	15.08
			4	FLOW	2053.
				TIME	17.33
			5	FLOW	3543.
				TIME	16.33
			6	FLOW	5354.
				TIME	15.83
			** PEAK STAGES IN FEET **		
			1	STAGE	2625.22
				TIME	16.67
			2	STAGE	2625.48
				TIME	15.50
			3	STAGE	2625.67
				TIME	15.08
			4	STAGE	2625.85
				TIME	17.33
			5	STAGE	2626.23
				TIME	16.33
			6	STAGE	2626.62
				TIME	15.83
ROUTED TO	RT12	16.01	1	FLOW	273.
				TIME	17.08
			2	FLOW	865.
				TIME	15.75
			3	FLOW	1445.
				TIME	15.33
			4	FLOW	2052.
				TIME	17.58
			5	FLOW	3541.
				TIME	16.50

			6	FLOW	5349.
				TIME	16.00
HYDROGRAPH AT	HUGHES	2.05	1	FLOW	118.
				TIME	14.42
			2	FLOW	337.
				TIME	14.17
			3	FLOW	515.
				TIME	14.17
			4	FLOW	701.
				TIME	14.17
			5	FLOW	876.
				TIME	14.17
			6	FLOW	1071.
				TIME	14.17
2 COMBINED AT	HUGHIN	18.06	1	FLOW	332.
				TIME	16.75
			2	FLOW	1088.
				TIME	15.17
			3	FLOW	1849.
				TIME	15.00
			4	FLOW	2625.
				TIME	14.83
			5	FLOW	3905.
				TIME	16.50
			6	FLOW	5920.
				TIME	15.92
ROUTED TO	HUGHPL	18.06	1	FLOW	331.
				TIME	17.00
			2	FLOW	1086.
				TIME	15.42
			3	FLOW	1844.
				TIME	15.08
			4	FLOW	2617.
				TIME	14.92
			5	FLOW	3892.
				TIME	16.58
			6	FLOW	5900.
				TIME	16.00
			** PEAK STAGES IN FEET **		
			1	STAGE	2590.40
				TIME	17.00
			2	STAGE	2590.88
				TIME	15.33
			3	STAGE	2591.25
				TIME	15.08
			4	STAGE	2591.59
				TIME	14.92
			5	STAGE	2592.07
				TIME	16.58
			6	STAGE	2592.73
				TIME	16.00
ROUTED TO	RT13	18.06	1	FLOW	331.
				TIME	17.25
			2	FLOW	1086.
				TIME	15.58

			3	FLOW	1844.
				TIME	15.25
			4	FLOW	2615.
				TIME	15.08
			5	FLOW	3888.
				TIME	16.67
			6	FLOW	5895.
				TIME	16.08
HYDROGRAPH AT	SH846B	.47	1	FLOW	46.
				TIME	13.17
			2	FLOW	134.
				TIME	13.08
			3	FLOW	200.
				TIME	13.08
			4	FLOW	273.
				TIME	13.08
			5	FLOW	342.
				TIME	13.08
			6	FLOW	411.
				TIME	13.00
2 COMBINED AT	SH846X	18.53	1	FLOW	338.
				TIME	17.17
			2	FLOW	1116.
				TIME	15.50
			3	FLOW	1892.
				TIME	15.25
			4	FLOW	2673.
				TIME	15.00
			5	FLOW	3932.
				TIME	16.67
			6	FLOW	5955.
				TIME	16.08
HYDROGRAPH AT	CURRIE	2.54	1	FLOW	108.
				TIME	15.92
			2	FLOW	296.
				TIME	15.50
			3	FLOW	454.
				TIME	15.50
			4	FLOW	607.
				TIME	15.42
			5	FLOW	768.
				TIME	15.42
			6	FLOW	949.
				TIME	15.42
ROUTED TO	RT14	2.54	1	FLOW	108.
				TIME	16.42
			2	FLOW	296.
				TIME	15.92
			3	FLOW	454.
				TIME	15.83
			4	FLOW	607.
				TIME	15.67
			5	FLOW	768.
				TIME	15.67
			6	FLOW	949.
				TIME	15.67

HYDROGRAPH AT	BLGRAV	1.90	1	FLOW	113.
				TIME	14.25
			2	FLOW	324.
				TIME	14.08
			3	FLOW	495.
				TIME	14.08
			4	FLOW	674.
				TIME	14.08
			5	FLOW	842.
				TIME	14.00
			6	FLOW	1027.
				TIME	14.00
2 COMBINED AT	BLGIN	4.44	1	FLOW	181.
				TIME	15.58
			2	FLOW	516.
				TIME	14.83
			3	FLOW	803.
				TIME	14.75
			4	FLOW	1091.
				TIME	14.67
			5	FLOW	1383.
				TIME	14.67
			6	FLOW	1711.
				TIME	14.67
ROUTED TO	BLGRPL	4.44	1	FLOW	172.
				TIME	16.42
			2	FLOW	490.
				TIME	15.50
			3	FLOW	771.
				TIME	15.33
			4	FLOW	1052.
				TIME	15.08
			5	FLOW	1343.
				TIME	15.00
			6	FLOW	1670.
				TIME	15.00
			** PEAK STAGES IN FEET **		
			1	STAGE	2635.26
				TIME	16.42
			2	STAGE	2635.52
				TIME	15.50
			3	STAGE	2635.70
				TIME	15.25
			4	STAGE	2635.86
				TIME	15.08
			5	STAGE	2636.02
				TIME	15.00
			6	STAGE	2636.18
				TIME	15.00
ROUTED TO	RT15	4.44	1	FLOW	172.
				TIME	17.33
			2	FLOW	490.
				TIME	16.17
			3	FLOW	771.
				TIME	15.83

			4	FLOW	1052.
				TIME	15.58
			5	FLOW	1342.
				TIME	15.50
			6	FLOW	1670.
				TIME	15.42
HYDROGRAPH AT	WRIGHT	.73	1	FLOW	88.
				TIME	12.92
			2	FLOW	255.
				TIME	12.83
			3	FLOW	378.
				TIME	12.83
			4	FLOW	515.
				TIME	12.83
			5	FLOW	648.
				TIME	12.75
			6	FLOW	780.
				TIME	12.75
ROUTED TO	WRGHTP	.73	1	FLOW	43.
				TIME	13.67
			2	FLOW	154.
				TIME	13.42
			3	FLOW	254.
				TIME	13.33
			4	FLOW	368.
				TIME	13.25
			5	FLOW	479.
				TIME	13.17
			6	FLOW	596.
				TIME	13.17
			** PEAK STAGES IN FEET **		
			1	STAGE	2625.10
				TIME	13.67
			2	STAGE	2625.24
				TIME	13.42
			3	STAGE	2625.33
				TIME	13.25
			4	STAGE	2625.43
				TIME	13.25
			5	STAGE	2625.51
				TIME	13.17
			6	STAGE	2625.59
				TIME	13.17
ROUTED TO	RT16	.73	1	FLOW	43.
				TIME	14.08
			2	FLOW	154.
				TIME	13.67
			3	FLOW	254.
				TIME	13.50
			4	FLOW	366.
				TIME	13.50
			5	FLOW	477.
				TIME	13.42
			6	FLOW	595.
				TIME	13.33

HYDROGRAPH AT	B18	1.95	1	FLOW	111.
				TIME	14.42
			2	FLOW	317.
				TIME	14.25
			3	FLOW	484.
				TIME	14.25
			4	FLOW	659.
				TIME	14.17
			5	FLOW	824.
				TIME	14.17
			6	FLOW	1008.
				TIME	14.17
HYDROGRAPH AT	B19	1.60	1	FLOW	143.
				TIME	13.33
			2	FLOW	418.
				TIME	13.25
			3	FLOW	625.
				TIME	13.25
			4	FLOW	854.
				TIME	13.17
			5	FLOW	1072.
				TIME	13.17
			6	FLOW	1293.
				TIME	13.17
4 COMBINED AT	RAYLNG	8.72	1	FLOW	284.
				TIME	16.25
			2	FLOW	857.
				TIME	15.33
			3	FLOW	1387.
				TIME	15.08
			4	FLOW	1883.
				TIME	14.83
			5	FLOW	2460.
				TIME	14.67
			6	FLOW	3111.
				TIME	14.67
ROUTED TO	RT17	8.72	1	FLOW	284.
				TIME	16.42
			2	FLOW	856.
				TIME	15.42
			3	FLOW	1387.
				TIME	15.17
			4	FLOW	1883.
				TIME	14.92
			5	FLOW	2460.
				TIME	14.75
			6	FLOW	3110.
				TIME	14.75
HYDROGRAPH AT	BATJER	.91	1	FLOW	84.
				TIME	13.25
			2	FLOW	244.
				TIME	13.17
			3	FLOW	366.
				TIME	13.17
			4	FLOW	500.
				TIME	13.17

			5	FLOW	625.
				TIME	13.17
			6	FLOW	754.
				TIME	13.17
2 COMBINED AT	BTJOUT	9.63	1	FLOW	316.
				TIME	13.75
			2	FLOW	987.
				TIME	13.58
			3	FLOW	1531.
				TIME	13.50
			4	FLOW	2123.
				TIME	13.50
			5	FLOW	2686.
				TIME	13.42
			6	FLOW	3366.
				TIME	14.58

*** NORMAL END OF HEC-1 ***

NORMAL END OF HEC-1

HEC1 S/N: 1090525070   HMVersion: 5.20   Data File: BRWN-ALT.HC1

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****************************************                ****************************************
*                                      *                *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                *   U.S. ARMY CORPS OF ENGINEERS       *
*             FEBRUARY 1981            *                * THE HYDROLOGIC ENGINEERING CENTER    *
*           REVISED 02 AUG 88          *                *        609 SECOND STREET             *
*                                      *                *     DAVIS, CALIFORNIA 95616          *
*  RUN DATE  09/14/1990  TIME  10:31:42 *               *                                      *
*                                      *                *                                      *
****************************************                ****************************************
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X     X  XXXXXXX   XXXXX         X
X     X  X        X     X       XX
X     X  X        X              X
XXXXXXX  XXXX     X       XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX        XXX
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::::::::::::::::::::::::::::::::::::::::
::::::::::::::::::::::::::::::::::::::::
:::                                  :::
:::  Full Microcomputer Implementation :::
:::               by                 :::
:::        Haestad Methods, Inc.     :::
:::                                  :::
::::::::::::::::::::::::::::::::::::::::
::::::::::::::::::::::::::::::::::::::::
```

37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

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LINE    ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

        *DIAGRAM
        ID    MARTIN COUNTY FLOOD CONTROL STUDY     JOB NO. 06901-001-036
        ID    HDR ENGINEERING, INC.                 AUSTIN, TEXAS
        ID
        ID    BROWN AREA PROPOSED ALTERNATIVES
        ID
        ID    COMPUTING 2-YR, 5-YR, 10-YR, 25-YR, 50-YR, AND 100-YR FLOOD EVENTS
        ID    FOR BROWN AREA USING PLAN OPTION IN HEC-1.
        ID
        ID              PLAN 1:   2-YEAR EVENT
        ID              PLAN 2:   5-YEAR EVENT
        ID              PLAN 3:  10-YEAR EVENT
        ID              PLAN 4:  25-YEAR EVENT
        ID              PLAN 5:  50-YEAR EVENT
        ID              PLAN 6: 100-YEAR EVENT
        ID
        ID
        IT       5                 300
        IO       5       0
        JP       6

        KK  BECKMY
        KM    RUNOFF HYDROGRAPH FOR BECKMEYER SUBBASIN
        KP       1
        PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
        BA    1.01
        LS       0      72
        UD    0.83
        KP       2
        PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
        KP       3
        PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
        KP       4
        PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
        KP       5
        PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
        KP       6
        PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

        KK  BECKPL
        KM    ROUTE BECKMEYER RUNOFF HYDROGRAPH THROUGH BECKMEYER PLAYA
        KM    PIPE INVERT AT EL 2655
        KM    SPILL AT 2660
        RS       1    ELEV    2755
        SV       0     154     438
        SE    2755    2760    2765
        SL    2755     3.1     0.6     0.5
        SS    2760     500     2.6     1.5

        KK    RT01
        KM    ROUTE BECKMEYER PLAYA OUTFLOW HYDROGRAPH TO MULLINS PLAYA
        RK    4500   .0044   0.030            TRAP      30       4
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

              KK  MULLIN
              KM    RUNOFF HYDROGRAPH FOR MULLINS SUBBASIN
              PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
              BA    1.94
              LS       0      72
              UD    1.20
              KP       2
              PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
              KP       3
              PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
              KP       4
              PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
              KP       5
              PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
              KP       6
              PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

              KK  MULLIN
              KM    COMBINE RT01 WITH MULLINS HYDROGRAPH TO GIVE INFLOW TO MULLINS PLAYA
              HC       2

              KK  MULLPL
              KM    ROUTE MULLIN INFLOW HYDROGRAPH THROUGH MULLINS PLAYA
              KM    PIPE INVERT AT 2735
              KM    SPILL AT 2740.5
              RS       1    ELEV    2735
              SV       0     111     276
              SE    2735    2740    2745
              SL    2735     3.1     0.6     1.5
              SS  2740.5     500     2.6     1.5

              KK    RT02
              KM    ROUTE MULLPL TO COOK OUTLET
              RK    4000   .0062   0.030            TRAP      30       4

              KK    COOK
              KM    RUNOFF HYDROGRAPH FOR COOK SUBBASIN
              PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
              BA    0.84
              LS       0      72
              UD    0.97
              KP       2
              PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
              KP       3
              PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
              KP       4
              PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
              KP       5
              PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
              KP       6
              PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9
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ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

KK   CKOUT
KM    COMBINE RT02 WITH COOK HYDROGRAPH TO GIVE TOTAL HYDROGRAPH AT COOK OUTLET
HC       2

KK    RT03
KM    ROUTE COOK OUTFLOW HYDROGRAPH TO BOND LAKE
RK    4000   .0037   0.030            TRAP      30       4

KK    BOND
KM    RUNOFF HYDROGRAPH FOR BOND LAKE SUBBBASIN
PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
BA    0.74
LS       0      72
UD    1.00
KP       2
PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
KP       3
PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
KP       4
PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
KP       5
PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
KP       6
PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

KK  BONDIN
KM    COMBINE RT03 WITH BOND HYDROGRAPH TO GIVE INFLOW HYDROGRAPH TO BOND LAKE
HC       2

KK  BONDLK
KM    ROUTE BOND LAKE INFLOW HYDROGRAPH THROUGH BOND LAKE
KM    PIPE INVERT AT EL 2700
KM    SPILL AT EL 2703
RS       1    ELEV    2700
SV       0     342
SE    2700    2705
SL    2700     3.1     0.6     0.5
SS    2703     500     2.6     1.5

KK    RT04
KM    ROUTE BOND LAKE OUTFLOW HYDROGRAPH TO LANGHAM PLAYA
RK    5500   .0027   0.030            TRAP      30       4

KK      B5
KM    RUNOFF HYDROGRAPH FOR B5 SUBBASIN
PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
BA    2.00
LS       0      72
UD    2.40
KP       2
PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
KP       3
PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
KP       4
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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 144            PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 145            KP       5
 146            PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 147            KP       6
 148            PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 149            KK    RT06
 150            KM    ROUTE B5 RUNOFF HYDROGRAPH TO LANGHAM PLAYA
 151            RK    5000   .0060   0.030            TRAP       5       1

 152            KK      B6
 153            KM    RUNOFF HYDROGRAPH FOR B6 SUBBASIN
 154            PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 155            BA    1.16
 156            LS       0      72
 157            UD    1.15
 158            KP       2
 159            PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 160            KP       3
 161            PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 162            KP       4
 163            PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 164            KP       5
 165            PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 166            KP       6
 167            PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 168            KK  LANGHM
 169            KM    COMBINE RT06 AND B6 HYDROGRAPHS TO GIVE LANGHAM SUBBASIN RUNOFF HYDROGRAPH
 170            HC       2

 171            KK  LANGIN
 172            KM    COMBINE LANGHM AND RT04 HYDROGRAPH TO GIVE INFLOW HYDROGRAPH TO LANGHAM LAKE
 173            HC       2

 174            KK  LANGPL
 175            KM    ROUTE LANGHAM PLAYA INFLOW HYDROGRAPH THROUGH LANGHAM PLAYA
 176            KM    PIPE INVERT AT 2670
 177            KM    SPILL AT 2675
 178            RS       1    ELEV    2670
 179            SV       0     114     228
 180            SE    2670    2675    2680
 181            SL    2670     3.1     0.6     0.5
 182            SS    2675     500     2.6     1.5

 183            KK  DRYWLS
 184            KM    RUNOFF HYDROGRAPH FOR DRY WELLS SUBBASIN
 185            PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 186            BA    0.73
 187            LS       0      72
 188            UD    1.06
 189            KP       2
 190            PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 191            KP       3
 192            PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
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LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 193           KP       4
 194           PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 195           KP       5
 196           PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 197           KP       6
 198           PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 199           KK   DRYIN
 200           KM     COMBINE LANGHAM PLAYA OUTFLOW HYDROGRAPH WITH DRY WELLS RUNOFF HYDROGRAPH
 201           KM     TO GIVE INFLOW HYDROGRAPH TO DRY WELLS PLAYA
 202           HC       2

 203           KK  DRYWPL
 204           KM     ROUTE DRY WELLS PLAYA INFLOW HYDROGRAPH THROUG DRY WELLS PLAYA
 205           RS       1    ELEV    2765
 206           SV       0      68     208     485     970
 207           SE    2755    2760    2765    2770    2775
 208           SL    2765     3.1     0.6     1.5
 209           SS    2770    1000     2.6     1.5

 210           KK   DAVIS
 211           KM     RUNOFF HYDROGRAPH FOR DAVIS SUBBASIN
 212           PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 213           BA    1.34
 214           LS       0      72
 215           UD    1.85
 216           KP       2
 217           PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 218           KP       3
 219           PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 220           KP       4
 221           PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 222           KP       5
 223           PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 224           KP       6
 225           PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 226           KK  DAVPLY
 227           KM     ROUTE DAVIS RUNOFF HYDROGRAPH THROUGH DAVIS PLAYA
 228           RS       1    ELEV    2760
 229           SV       0      68     208     485
 230           SE    2755    2760    2765    2770
 231           SL    2760     3.1     0.6     0.5
 232           SS    2765     500     2.6     1.5

 233           KK    RT07
 234           KM     ROUTE DAVIS PLAYA OUTFLOW HYDROGRAPH TO HALE PLAYA
 235           RK    9300   .0060   0.030            TRAP      30       4

 236           KK  STAFFD
 237           KM     RUNOFF HYDROGRAPH FOR STAFFORD SUBBASIN
 238           PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 239           BA    0.57
 240           LS       0      72
 241           UD    0.96
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 242          KP       2
 243          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 244          KP       3
 245          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 246          KP       4
 247          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 248          KP       5
 249          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 250          KP       6
 251          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 252          KK  STAFPL
 253          KM    ROUTE STAFFORD RUNOFF HYDROGRAPH THROUGH STAFFORD PLAYA
 254          RS       1    ELEV    2740
 255          SV       0      84     256
 256          SE    2740    2745    2750
 257          SL    2740     3.1     0.6     0.5
 258          SS    2745     500     2.6     1.5

 259          KK    RT08
 260          KM    ROUTE STAFFORD PLAYA OUTFLOW HYDROGRAPH TO HALE PLAYA
 261          RK    5500   .0060   0.030            TRAP      30       4

 262          KK    HALE
 263          KM    RUNOFF HYDROGRAPH FOR HALE SUBBASIN
 264          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 265          BA    1.15
 266          LS       0      72
 267          UD    1.89
 268          KP       2
 269          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 270          KP       3
 271          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 272          KP       4
 273          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 274          KP       5
 275          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 276          KP       6
 277          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 278          KK  HALEIN
 279          KM    COMBINE HALE - RT07 - RT08 TO GIVE INFLOW HYDROGRAPH TO HALE PLAYA
 280          HC       3

 281          KK  HALEPL
 282          KM    ROUTE HALE INFLOW HYDROGRAPH THROUGH HALE PLAYA
 283          RS       1    ELEV    2700
 284          SV       0     114     386
 285          SE    2700    2705    2710
 286          SL    2700     3.1     0.6     0.5
 287          SS    2705     500     2.6     1.5
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 288          KK    RT09
 289          KM    ROUTE HALE PLAYA OUTFLOW HYDROGRAPH TO HWY 26 CROSSING
 290          RK    8000   .0056   0.030              TRAP        5       1

 291          KK    HUNT
 292          KM    RUNOFF HYDROGRAPH FOR HUNT SUBBASIN
 293          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 294          BA    0.93
 295          LS       0      72
 296          UD    1.38
 297          KP       2
 298          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 299          KP       3
 300          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 301          KP       4
 302          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 303          KP       5
 304          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 305          KP       6
 306          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 307          KK   HWY26
 308          KM    COMBINE HYDROGRAPHS AT HWY 26 CROSSING
 309          HC       3

 310          KK    RT10
 311          KM    ROUTE HWY26 HYDROGRAPH TO MARILYN PLAYA
 312          RK    4000   .0037   0.030              TRAP       30       4

 313          KK  MARILN
 314          KM    RUNOFF HYDROGRAPH FOR MARILYN SUBBASIN
 315          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 316          BA    1.32
 317          LS       0      72
 318          UD    0.62
 319          KP       2
 320          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 321          KP       3
 322          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 323          KP       4
 324          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 325          KP       5
 326          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 327          KP       6
 328          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 329          KK   MRLIN
 330          KM    COMBINE RT10 WITH MARILN RUNOFF HYDROGRAPH TO GIVE INFLOW HYDROGRAPH INTO
 331          KM    MARILYN PLAYA
 332          HC       2
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 333          KK  MRLNPL
 334          RS       1    ELEV    2640
 335          SV       0     122     602    1706
 336          SE    2635    2640    2645    2650
 337          SL    2640     3.1     0.6     0.5
 338          SS    2643    1500     2.6     1.5

 339          KK    RT11
 340          KM    ROUTE MARILYN PLAYA OUTFLOW HYDORGRAPH TO COUNTY ROAD B1 CROSSING
 341          RK    7000   .0028   0.030            TRAP      30       4

 342          KK  ELLSBY
 343          KM    RUNOFF HYDROGRAPH FOR ELLSBERRY SUBBASIN
 344          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 345          BA    2.28
 346          LS       0      72
 347          UD    1.67
 348          KP       2
 349          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 350          KP       3
 351          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 352          KP       4
 353          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 354          KP       5
 355          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 356          KP       6
 357          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 358          KK  ELLSIN
 359          KM    COMBINE ELLSBY RUNOFF HYDROGRAPH WITH RT11 TO GIVE HYDROGRAPH AT ELLSBERRY
 360          KM    PLAYA
 361          HC       2

 362          KK  ELLSPL
 363          KM    ROUTE ELLSBERRY INFLOW HYDROGRAPH THROUGH ELLSBERRY PLAYA
 364          RS       1    ELEV    2620
 365          SV       0     522    1044
 366          SE    2620    2625    2630
 367          SL    2620     3.1     0.6     0.5
 368          SS    2625    1000     2.6     1.5

 369          KK    RT12
 370          KM    ROUTE COUNTY ROAD CROSSING HYDROGRAPH TO HUGHES PLAYA
 371          RK    8000   .0030   0.030            TRAP      30       4

 372          KK  HUGHES
 373          KM    RUNOFF HYDROGRAPH FOR HUGHES SUBBASIN
 374          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 375          BA    2.05
 376          LS       0      72
 377          UD    1.92
 378          KP       2
 379          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 380          KP       3
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 381          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 382          KP       4
 383          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 384          KP       5
 385          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 386          KP       6
 387          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 388          KK  HUGHIN
 389          KM    COMBIE RT12 WITH HUGHES RUNOFF HYDROGRAPH TO GIVE INFLOW HYDROGRAPH INTO
 390          KM    HUGHES PLAYA
 391          HC       2

 392          KK  HUGHPL
 393          KM    ROUTE HUGHES PLAYA INFLOW HYDROGRAPH THROUGH HUGHES PLAYA
 394          RS       1    ELEV    2590
 395          SV       0     106     480    1328
 396          SE    2590    2595    2600    2605
 397          SL    2590     3.1     0.6     0.5
 398          SS    2596     500     2.6     1.5

 399          KK    RT13
 400          KM    ROUTE HUGHES PLAYA OUTFLOW HYDROGRAPH TO HWY 846 CROSSING
 401          RK    5500   .0030   0.030            TRAP      20       4

 402          KK  SH846B
 403          KM    RUNOFF HYDROGRAPH FOR S.H. 846 B SUBBASIN
 404          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 405          BA    0.47
 406          LS       0      72
 407          UD    0.92
 408          KP       2
 409          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 410          KP       3
 411          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 412          KP       4
 413          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 414          KP       5
 415          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 416          KP       6
 417          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 418          KK  SH846X
 419          KM    COMBINE RT13 WITH SH846B RUNOFF HYDROGRAPH TO GIVE HYDROGRAPH AT
 420          KM    S.H. 846 CROSSING WEST OF BATJER PLAYA
 421          HC       2

 422          KK  CURRIE
 423          KM    RUNOFF HYDROGRAPH FOR CURRIE SUBBASIN
 424          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 425          BA    2.54
 426          LS       0      72
 427          UD    3.03
 428          KP       2
 429          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 430        KP       3
 431        PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 432        KP       4
 433        PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 434        KP       5
 435        PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 436        KP       6
 437        PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 438        KK  CURDET
 439        KM    ROUTE CURRIE RUNOFF HYDROGRAPH THROUGH CURRIE DETENTION BASIN
 440        RS       1    ELEV    2668
 441        SV       0      19     366    1447
 442        SE    2668    2670    2675    2680
 443        SL    2668     3.1     0.6     0.5
 444        SS    2673     500     2.6     1.5

 445        KK    RT14
 446        KM    ROUTE CURRIE RUNOFF HYDROGRAPH TO BLAGRAVE PLAYA
 447        RK    8000   .0038   0.030            TRAP      30       4

 448        KK  BLGRAV
 449        KM    RUNOFF HYDROGRAPH FOR BLAGRAVE SUBBASIN
 450        PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 451        BA    1.90
 452        LS       0      72
 453        UD    1.83
 454        KP       2
 455        PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 456        KP       3
 457        PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 458        KP       4
 459        PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 460        KP       5
 461        PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 462        KP       6
 463        PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 464        KK   BLGIN
 465        KM    COMBINE RT14 HYDROGRAPH WITH BLGRAV HYDROGRAPH TO GIVE INFLOW HYDROGRAPH
 466        KM    FOR BLAGRAVE PLAYA
 467        HC       2

 468        KK  BLGRPL
 469        KM    ROUTE BLAGRAVE PLAYA INFLOW HYDROGRAPH THROUGH BLAGRAVE PLAYA
 470        RS       1    ELEV    2630
 471        SV       0      76     347
 472        SE    2630    2635    2640
 473        SL    2630     3.1     0.6     0.5
 474        SS    2637     500     2.6     1.5
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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 475        KK    RT15
 476        KM    ROUTE BLAGRAVE PLAYA OUTFLOW HYDROGRAPH TO RAYLONG PLAYAS
 477        RK   14000   .0028   0.030             TRAP      30       4

 478        KK  WRIGHT
 479        KM    RUNOFF HYDROGRAPH FOR WRIGHT SUBBASIN
 480        PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 481        BA    0.73
 482        LS       0      72
 483        UD    0.67
 484        KP       2
 485        PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 486        KP       3
 487        PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 488        KP       4
 489        PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 490        KP       5
 491        PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 492        KP       6
 493        PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 494        KK  WRGHTP
 495        KM    ROUTE WRIGHT RUNOFF HYDROGRAPH THROUGH WRIGHT PLAYA
 496        RS       1    ELEV    2622
 497        SV       0      10      72     322     572
 498        SE    2613    2615    2620    2625    2630
 499        SL    2622     3.1     0.6     0.5
 500        SS    2625     500     2.6     1.5

 501        KK    RT16
 502        KM    ROUTE WRIGHT PLAYA OUTFLOW HYDROGRAPH TO RAYLONG PLAYAS
 503        RK    6000   .0050   0.030             TRAP      20       4

 504        KK     B18
 505        KM    RUNOFF HYDROGRAPH FOR B18 SUBBASIN
 506        PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 507        BA    1.95
 508        LS       0      72
 509        UD    1.95
 510        KP       2
 511        PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 512        KP       3
 513        PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 514        KP       4
 515        PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 516        KP       5
 517        PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 518        KP       6
 519        PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


 520          KK    B19
 521          KM    RUNOFF HYDROGRAPH FOR B19 SUBBASIN
 522          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 523          BA    1.60
 524          LS       0      72
 525          UD    1.04
 526          KP       2
 527          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 528          KP       3
 529          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 530          KP       4
 531          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 532          KP       5
 533          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 534          KP       6
 535          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 536          KK  RAYLNG
 537          KM    COMBINE B18 - B19 - RT15 - RT16 TO GIVE INFLOW HYDROGRAPH TO RAYLONG PLAYAS
 538          HC       4

 539          KK    RT17
 540          KM    ROUTE RAYLONG HYDROGRAPH TO S.H. 846
 541          RK    4000   .0038   0.030            TRAP      10       4

 542          KK  BATJER
 543          KM    RUNOFF HYDROGRAPH FOR BATJER SUBBASIN
 544          PH      50    28.2    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 545          BA    0.91
 546          LS       0      72
 547          UD    1.00
 548          KP       2
 549          PH      20    28.2    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 550          KP       3
 551          PH      10    28.2    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 552          KP       4
 553          PH       4    28.2    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 554          KP       5
 555          PH       2    28.2    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 556          KP       6
 557          PH       1    28.2    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 558          KK  BTJOUT
 559          HC       2
 560          ZZ
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                SCHEMATIC DIAGRAM OF STREAM NETWORK
INPUT
 LINE      (V) ROUTING         (--->) DIVERSION OR PUMP FLOW

  NO.      (.) CONNECTOR       (<---) RETURN OF DIVERTED OR PUMPED FLOW

   20      BECKMY
                V
                V
   37      BECKPL
                V
                V
   46        RT01
                .
                .
   49           .     MULLIN
                .          .
                .          .
   65      MULLIN............
                V
                V
   68      MULLPL
                V
                V
   77        RT02
                .
                .
   80           .       COOK
                .          .
                .          .
   96       CKOUT............
                V
                V
   99        RT03
                .
                .
  102           .       BOND
                .          .
                .          .
  118      BONDIN............
                V
                V
  121      BONDLK
                V
                V
  130        RT04
                .
                .
  133           .         B5
                .          V
                .          V
  149           .       RT06
                .          .
                .          .
  152           .          .           B6
                .          .            .
                .          .            .
  168           .     LANGHM............
                .          .
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              .           .
171      LANGIN............
              V
              V
174      LANGPL
              .
              .
183           .     DRYWLS
              .           .
              .           .
199       DRYIN............
              V
              V
203      DRYWPL
              .
              .
210           .      DAVIS
              .           V
              .           V
226           .     DAVPLY
              .           V
              .           V
233           .       RT07
              .           .
              .           .
236           .           .     STAFFD
              .           .           V
              .           .           V
252           .           .     STAFPL
              .           .           V
              .           .           V
259           .           .       RT08
              .           .           .
              .           .           .
262           .           .           .        HALE
              .           .           .           .
              .           .           .           .
278           .     HALEIN........................
              .           V
              .           V
281           .     HALEPL
              .           V
              .           V
288           .       RT09
              .           .
              .           .
291           .           .       HUNT
              .           .           .
              .           .           .
307       HWY26........................
              V
              V
310        RT10
              .
              .
313           .     MARILN
              .           .
              .           .
329       MRLIN............
              V
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              V
 333    MRLNPL
              V
              V
 339      RT11
              .
              .
 342          .     ELLSBY
              .          .
              .          .
 358    ELLSIN............
              V
              V
 362    ELLSPL
              V
              V
 369      RT12
              .
              .
 372          .     HUGHES
              .          .
              .          .
 388    HUGHIN............
              V
              V
 392    HUGHPL
              V
              V
 399      RT13
              .
              .
 402          .     SH846B
              .          .
              .          .
 418    SH846X............
              .
              .
 422          .     CURRIE
              .          V
              .          V
 438          .     CURDET
              .          V
              .          V
 445          .       RT14
              .          .
              .          .
 448          .          .     BLGRAV
              .          .          .
              .          .          .
 464          .      BLGIN............
              .          V
              .          V
 468          .     BLGRPL
              .          V
              .          V
 475          .       RT15
              .          .
              .          .
 478          .          .     WRIGHT
              .          .          V
```

```
                 .           .           V
 494             .           .        WRGHTP
                 .           .           V
                 .           .           V
 501             .           .         RT16
                 .           .           .
                 .           .           .
 504             .           .           .          B18
                 .           .           .           .
                 .           .           .           .
 520             .           .           .           .           B19
                 .           .           .           .            .
                 .           .           .           .            .
 536             .        RAYLNG.....................................
                 .           V
                 .           V
 539             .         RT17
                 .           .
                 .           .
 542             .           .        BATJER
                 .           .           .
                 .           .           .
 558             .        BTJOUT............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

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HEC1 S/N: 1090525070        HMVersion: 5.20    Data File: BRWN-ALT.HC1

*****************************************                                                   ****************************************
*                                       *                                                   *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                   *   U.S. ARMY CORPS OF ENGINEERS       *
*             FEBRUARY 1981             *                                                   * THE HYDROLOGIC ENGINEERING CENTER    *
*           REVISED 02 AUG 88           *                                                   *          609 SECOND STREET           *
*                                       *                                                   *       DAVIS, CALIFORNIA 95616        *
*  RUN DATE  09/14/1990  TIME  10:31:42 *                                                   *                                      *
*                                       *                                                   *                                      *
*****************************************                                                   ****************************************


                                    MARTIN COUNTY FLOOD CONTROL STUDY      JOB NO. 06901-001-036
                                    HDR ENGINEERING, INC.                  AUSTIN, TEXAS

                                    BROWN AREA PROPOSED ALTERNATIVES

                                    COMPUTING 2-YR, 5-YR, 10-YR, 25-YR, 50-YR, AND 100-YR FLOOD EVENTS
                                    FOR BROWN AREA USING PLAN OPTION IN HEC-1.

                                              PLAN 1:   2-YEAR EVENT
                                              PLAN 2:   5-YEAR EVENT
                                              PLAN 3:  10-YEAR EVENT
                                              PLAN 4:  25-YEAR EVENT
                                              PLAN 5:  50-YEAR EVENT
                                              PLAN 6: 100-YEAR EVENT


  18 IO           OUTPUT CONTROL VARIABLES
                        IPRNT            5  PRINT CONTROL
                        IPLOT            0  PLOT CONTROL
                        QSCAL           0.  HYDROGRAPH PLOT SCALE

     IT           HYDROGRAPH TIME DATA
                         NMIN            5  MINUTES IN COMPUTATION INTERVAL
                        IDATE       1    0  STARTING DATE
                        ITIME         0000  STARTING TIME
                           NQ          300  NUMBER OF HYDROGRAPH ORDINATES
                       NDDATE       2    0  ENDING DATE
                       NDTIME         0055  ENDING TIME
                       ICENT            19  CENTURY MARK

                  COMPUTATION INTERVAL     .08 HOURS
                       TOTAL TIME BASE   24.92 HOURS

          ENGLISH UNITS
               DRAINAGE AREA          SQUARE MILES
               PRECIPITATION DEPTH    INCHES
               LENGTH, ELEVATION      FEET
               FLOW                   CUBIC FEET PER SECOND
               STORAGE VOLUME         ACRE-FEET
               SURFACE AREA           ACRES
               TEMPERATURE            DEGREES FAHRENHEIT
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PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO FLOWS RATIO 1 1.00
HYDROGRAPH AT	BECKMY	1.01	1	FLOW	106.
				TIME	13.08
			2	FLOW	308.
				TIME	13.00
			3	FLOW	459.
				TIME	13.00
			4	FLOW	625.
				TIME	13.00
			5	FLOW	786.
				TIME	12.92
			6	FLOW	946.
				TIME	12.92
ROUTED TO	BECKPL	1.01	1	FLOW	9.
				TIME	23.17
			2	FLOW	19.
				TIME	23.42
			3	FLOW	23.
				TIME	24.25
			4	FLOW	27.
				TIME	21.58
			5	FLOW	30.
				TIME	24.08
			6	FLOW	43.
				TIME	22.83
			** PEAK STAGES IN FEET **		
			1	STAGE	2755.57
				TIME	22.75
			2	STAGE	2756.54
				TIME	23.58
			3	STAGE	2757.35
				TIME	24.25
			4	STAGE	2758.21
				TIME	21.75
			5	STAGE	2759.15
				TIME	24.08
			6	STAGE	2760.03
				TIME	22.83
ROUTED TO	RT01	1.01	1	FLOW	9.
				TIME	23.50
			2	FLOW	19.
				TIME	23.83
			3	FLOW	23.
				TIME	24.58
			4	FLOW	27.
				TIME	21.92
			5	FLOW	30.

				TIME	24.42
			6	FLOW	43.
				TIME	23.17
HYDROGRAPH AT	MULLIN	1.94	1	FLOW	157.
				TIME	13.50
			2	FLOW	457.
				TIME	13.42
			3	FLOW	686.
				TIME	13.42
			4	FLOW	937.
				TIME	13.42
			5	FLOW	1174.
				TIME	13.33
			6	FLOW	1420.
				TIME	13.33
2 COMBINED AT	MULLIN	2.95	1	FLOW	157.
				TIME	13.50
			2	FLOW	463.
				TIME	13.42
			3	FLOW	697.
				TIME	13.42
			4	FLOW	953.
				TIME	13.42
			5	FLOW	1191.
				TIME	13.33
			6	FLOW	1440.
				TIME	13.33
ROUTED TO	MULLPL	2.95	1	FLOW	27.
				TIME	22.00
			2	FLOW	91.
				TIME	17.67
			3	FLOW	155.
				TIME	16.58
			4	FLOW	255.
				TIME	15.58
			5	FLOW	572.
				TIME	14.58
			6	FLOW	944.
				TIME	14.17
			** PEAK STAGES IN FEET **		
			1	STAGE	2736.49
				TIME	21.92
			2	STAGE	2738.33
				TIME	17.67
			3	STAGE	2739.75
				TIME	16.58
			4	STAGE	2740.61
				TIME	15.58
			5	STAGE	2740.92
				TIME	14.58
			6	STAGE	2741.16
				TIME	14.17
ROUTED TO	RT02	2.95	1	FLOW	27.
				TIME	22.33
			2	FLOW	91.

				TIME	17.92
			3	FLOW	154.
				TIME	16.75
			4	FLOW	255.
				TIME	15.75
			5	FLOW	572.
				TIME	14.75
			6	FLOW	941.
				TIME	14.33
HYDROGRAPH AT	COOK	.84	1	FLOW	79.
				TIME	13.25
			2	FLOW	230.
				TIME	13.17
			3	FLOW	344.
				TIME	13.17
			4	FLOW	469.
				TIME	13.08
			5	FLOW	590.
				TIME	13.08
			6	FLOW	712.
				TIME	13.08
2 COMBINED AT	CKOUT	3.79	1	FLOW	79.
				TIME	13.25
			2	FLOW	230.
				TIME	13.17
			3	FLOW	344.
				TIME	13.17
			4	FLOW	481.
				TIME	13.25
			5	FLOW	750.
				TIME	14.67
			6	FLOW	1248.
				TIME	14.25
ROUTED TO	RT03	3.79	1	FLOW	79.
				TIME	13.50
			2	FLOW	230.
				TIME	13.33
			3	FLOW	344.
				TIME	13.33
			4	FLOW	480.
				TIME	13.42
			5	FLOW	749.
				TIME	14.75
			6	FLOW	1247.
				TIME	14.33
HYDROGRAPH AT	BOND	.74	1	FLOW	68.
				TIME	13.25
			2	FLOW	199.
				TIME	13.17
			3	FLOW	297.
				TIME	13.17
			4	FLOW	406.
				TIME	13.17
			5	FLOW	509.
				TIME	13.17
			6	FLOW	613.

				TIME	13.17
2 COMBINED AT	BONDIN	4.53	1	FLOW	145.
				TIME	13.42
			2	FLOW	424.
				TIME	13.25
			3	FLOW	638.
				TIME	13.25
			4	FLOW	874.
				TIME	13.25
			5	FLOW	1113.
				TIME	13.25
			6	FLOW	1511.
				TIME	14.25
ROUTED TO	BONDLK	4.53	1	FLOW	12.
				TIME	24.92
			2	FLOW	22.
				TIME	24.92
			3	FLOW	139.
				TIME	24.58
			4	FLOW	254.
				TIME	19.58
			5	FLOW	465.
				TIME	16.58
			6	FLOW	902.
				TIME	15.42
			** PEAK STAGES IN FEET **		
			1	STAGE	2700.75
				TIME	24.92
			2	STAGE	2702.26
				TIME	24.92
			3	STAGE	2703.19
				TIME	24.50
			4	STAGE	2703.31
				TIME	19.58
			5	STAGE	2703.48
				TIME	16.58
			6	STAGE	2703.76
				TIME	15.42
ROUTED TO	RT04	4.53	1	FLOW	11.
				TIME	24.92
			2	FLOW	22.
				TIME	24.92
			3	FLOW	139.
				TIME	24.92
			4	FLOW	254.
				TIME	19.92
			5	FLOW	465.
				TIME	16.83
			6	FLOW	901.
				TIME	15.67
HYDROGRAPH AT	B5	2.00	1	FLOW	99.
				TIME	15.08
			2	FLOW	277.
				TIME	14.75
			3	FLOW	425.

				TIME	14.75
			4	FLOW	575.
				TIME	14.67
			5	FLOW	722.
				TIME	14.67
			6	FLOW	888.
				TIME	14.67
ROUTED TO	RT06	2.00	1	FLOW	99.
				TIME	15.25
			2	FLOW	277.
				TIME	14.92
			3	FLOW	425.
				TIME	14.83
			4	FLOW	574.
				TIME	14.75
			5	FLOW	722.
				TIME	14.75
			6	FLOW	887.
				TIME	14.75
HYDROGRAPH AT	B6	1.16	1	FLOW	97.
				TIME	13.42
			2	FLOW	282.
				TIME	13.33
			3	FLOW	423.
				TIME	13.33
			4	FLOW	578.
				TIME	13.33
			5	FLOW	723.
				TIME	13.33
			6	FLOW	874.
				TIME	13.25
2 COMBINED AT	LANGHM	3.16	1	FLOW	147.
				TIME	14.75
			2	FLOW	424.
				TIME	13.75
			3	FLOW	654.
				TIME	13.83
			4	FLOW	900.
				TIME	13.75
			5	FLOW	1132.
				TIME	13.75
			6	FLOW	1391.
				TIME	13.75
2 COMBINED AT	LANGIN	7.69	1	FLOW	147.
				TIME	14.75
			2	FLOW	424.
				TIME	13.75
			3	FLOW	654.
				TIME	13.83
			4	FLOW	900.
				TIME	13.75
			5	FLOW	1135.
				TIME	13.83
			6	FLOW	1942.
				TIME	15.42

ROUTED TO	LANGPL	7.69	1	FLOW	25.
				TIME	24.92
			2	FLOW	201.
				TIME	17.58
			3	FLOW	518.
				TIME	15.67
			4	FLOW	779.
				TIME	15.00
			5	FLOW	1053.
				TIME	14.58
			6	FLOW	1924.
				TIME	15.58
			** PEAK STAGES IN FEET **		
			1	STAGE	2672.72
				TIME	24.92
			2	STAGE	2675.25
				TIME	17.58
			3	STAGE	2675.51
				TIME	15.67
			4	STAGE	2675.68
				TIME	15.00
			5	STAGE	2675.84
				TIME	14.58
			6	STAGE	2676.28
				TIME	15.58
HYDROGRAPH AT	DRYWLS	.73	1	FLOW	65.
				TIME	13.33
			2	FLOW	188.
				TIME	13.25
			3	FLOW	282.
				TIME	13.25
			4	FLOW	385.
				TIME	13.25
			5	FLOW	482.
				TIME	13.17
			6	FLOW	582.
				TIME	13.17
2 COMBINED AT	DRYIN	8.42	1	FLOW	68.
				TIME	13.42
			2	FLOW	228.
				TIME	17.50
			3	FLOW	587.
				TIME	15.67
			4	FLOW	890.
				TIME	14.92
			5	FLOW	1244.
				TIME	14.50
			6	FLOW	2061.
				TIME	15.50
ROUTED TO	DRYWPL	8.42	1	FLOW	7.
				TIME	24.92
			2	FLOW	46.
				TIME	24.92
			3	FLOW	109.
				TIME	24.92
			4	FLOW	386.

				TIME	21.75
			5	FLOW	875.
				TIME	18.00
			6	FLOW	1671.
				TIME	16.42
			** PEAK STAGES IN FEET **		
			1	STAGE	2765.61
				TIME	24.92
			2	STAGE	2767.11
				TIME	24.92
			3	STAGE	2768.76
				TIME	24.92
			4	STAGE	2770.18
				TIME	21.67
			5	STAGE	2770.40
				TIME	18.00
			6	STAGE	2770.67
				TIME	16.42
HYDROGRAPH AT	DAVIS	1.34	1	FLOW	79.
				TIME	14.33
			2	FLOW	227.
				TIME	14.08
			3	FLOW	346.
				TIME	14.08
			4	FLOW	472.
				TIME	14.08
			5	FLOW	589.
				TIME	14.08
			6	FLOW	719.
				TIME	14.08
ROUTED TO	DAVPLY	1.34	1	FLOW	12.
				TIME	23.67
			2	FLOW	23.
				TIME	24.92
			3	FLOW	28.
				TIME	24.92
			4	FLOW	32.
				TIME	24.25
			5	FLOW	117.
				TIME	18.83
			6	FLOW	252.
				TIME	16.75
			** PEAK STAGES IN FEET **		
			1	STAGE	2760.81
				TIME	23.58
			2	STAGE	2762.29
				TIME	24.92
			3	STAGE	2763.49
				TIME	24.92
			4	STAGE	2764.74
				TIME	24.25
			5	STAGE	2765.15
				TIME	18.83
			6	STAGE	2765.29
				TIME	16.75

ROUTED TO	RT07	1.34	1	FLOW	12.
				TIME	24.75
			2	FLOW	22.
				TIME	24.92
			3	FLOW	28.
				TIME	24.92
			4	FLOW	32.
				TIME	24.83
			5	FLOW	117.
				TIME	19.33
			6	FLOW	251.
				TIME	17.17
HYDROGRAPH AT	STAFFD	.57	1	FLOW	54.
				TIME	13.25
			2	FLOW	157.
				TIME	13.17
			3	FLOW	235.
				TIME	13.08
			4	FLOW	321.
				TIME	13.08
			5	FLOW	404.
				TIME	13.08
			6	FLOW	486.
				TIME	13.08
ROUTED TO	STAFPL	.57	1	FLOW	8.
				TIME	17.92
			2	FLOW	17.
				TIME	18.33
			3	FLOW	22.
				TIME	18.08
			4	FLOW	26.
				TIME	19.25
			5	FLOW	29.
				TIME	19.58
			6	FLOW	32.
				TIME	19.92
			** PEAK STAGES IN FEET **		
			1	STAGE	2740.50
				TIME	17.83
			2	STAGE	2741.34
				TIME	18.33
			3	STAGE	2742.09
				TIME	18.08
			4	STAGE	2742.95
				TIME	19.33
			5	STAGE	2743.79
				TIME	19.50
			6	STAGE	2744.68
				TIME	19.83
ROUTED TO	RT08	.57	1	FLOW	8.
				TIME	18.75
			2	FLOW	17.
				TIME	19.00
			3	FLOW	22.
				TIME	18.58
			4	FLOW	26.

				TIME	19.75
			5	FLOW	29.
				TIME	19.92
			6	FLOW	32.
				TIME	20.33
HYDROGRAPH AT	HALE	1.15	1	FLOW	67.
				TIME	14.33
			2	FLOW	192.
				TIME	14.17
			3	FLOW	292.
				TIME	14.17
			4	FLOW	398.
				TIME	14.17
			5	FLOW	497.
				TIME	14.08
			6	FLOW	608.
				TIME	14.08
3 COMBINED AT	HALEIN	3.06	1	FLOW	70.
				TIME	14.50
			2	FLOW	203.
				TIME	14.25
			3	FLOW	309.
				TIME	14.17
			4	FLOW	417.
				TIME	14.17
			5	FLOW	523.
				TIME	14.33
			6	FLOW	645.
				TIME	14.17
ROUTED TO	HALEPL	3.06	1	FLOW	17.
				TIME	24.92
			2	FLOW	28.
				TIME	24.92
			3	FLOW	51.
				TIME	24.92
			4	FLOW	119.
				TIME	20.17
			5	FLOW	234.
				TIME	19.42
			6	FLOW	447.
				TIME	17.42
			** PEAK STAGES IN FEET **		
			1	STAGE	2701.30
				TIME	24.92
			2	STAGE	2703.56
				TIME	24.92
			3	STAGE	2705.05
				TIME	24.92
			4	STAGE	2705.15
				TIME	20.17
			5	STAGE	2705.28
				TIME	19.33
			6	STAGE	2705.46
				TIME	17.42
ROUTED TO	RT09	3.06	1	FLOW	17.

				TIME	24.92
			2	FLOW	28.
				TIME	24.92
			3	FLOW	44.
				TIME	24.92
			4	FLOW	119.
				TIME	20.50
			5	FLOW	234.
				TIME	19.67
			6	FLOW	446.
				TIME	17.67
HYDROGRAPH AT	HUNT	.93	1	FLOW	68.
				TIME	13.75
			2	FLOW	197.
				TIME	13.58
			3	FLOW	298.
				TIME	13.58
			4	FLOW	407.
				TIME	13.58
			5	FLOW	508.
				TIME	13.58
			6	FLOW	616.
				TIME	13.50
3 COMBINED AT	HWY26	12.41	1	FLOW	68.
				TIME	13.75
			2	FLOW	200.
				TIME	13.58
			3	FLOW	303.
				TIME	13.58
			4	FLOW	525.
				TIME	21.50
			5	FLOW	1150.
				TIME	17.92
			6	FLOW	2116.
				TIME	16.42
ROUTED TO	RT10	12.41	1	FLOW	68.
				TIME	14.00
			2	FLOW	199.
				TIME	13.83
			3	FLOW	303.
				TIME	13.75
			4	FLOW	525.
				TIME	21.67
			5	FLOW	1150.
				TIME	18.08
			6	FLOW	2115.
				TIME	16.50
HYDROGRAPH AT	MARILN	1.32	1	FLOW	168.
				TIME	12.83
			2	FLOW	483.
				TIME	12.75
			3	FLOW	719.
				TIME	12.75
			4	FLOW	978.
				TIME	12.75
			5	FLOW	1231.

				TIME	12.75
			6	FLOW	1477.
				TIME	12.75
2 COMBINED AT	MRLIN	13.73	1	FLOW	168.
				TIME	12.83
			2	FLOW	528.
				TIME	12.92
			3	FLOW	809.
				TIME	12.83
			4	FLOW	1119.
				TIME	12.83
			5	FLOW	1427.
				TIME	12.83
			6	FLOW	2231.
				TIME	16.50
ROUTED TO	MRLNPL	13.73	1	FLOW	10.
				TIME	24.92
			2	FLOW	20.
				TIME	24.92
			3	FLOW	25.
				TIME	24.92
			4	FLOW	545.
				TIME	22.33
			5	FLOW	1208.
				TIME	18.50
			6	FLOW	2168.
				TIME	16.92
			** PEAK STAGES IN FEET **		
			1	STAGE	2640.65
				TIME	24.92
			2	STAGE	2641.74
				TIME	24.92
			3	STAGE	2642.81
				TIME	24.92
			4	STAGE	2643.26
				TIME	22.33
			5	STAGE	2643.43
				TIME	18.50
			6	STAGE	2643.66
				TIME	16.92
ROUTED TO	RT11	13.73	1	FLOW	10.
				TIME	24.92
			2	FLOW	19.
				TIME	24.92
			3	FLOW	24.
				TIME	24.92
			4	FLOW	545.
				TIME	22.58
			5	FLOW	1208.
				TIME	18.75
			6	FLOW	2166.
				TIME	17.17
HYDROGRAPH AT	ELLSBY	2.28	1	FLOW	145.
				TIME	14.08
			2	FLOW	418.

				TIME	13.92
			3	FLOW	635.
				TIME	13.92
			4	FLOW	866.
				TIME	13.92
			5	FLOW	1082.
				TIME	13.83
			6	FLOW	1318.
				TIME	13.83
2 COMBINED AT	ELLSIN	16.01	1	FLOW	145.
				TIME	14.08
			2	FLOW	418.
				TIME	13.92
			3	FLOW	635.
				TIME	13.92
			4	FLOW	866.
				TIME	13.92
			5	FLOW	1400.
				TIME	18.67
			6	FLOW	2500.
				TIME	17.00
ROUTED TO	ELLSPL	16.01	1	FLOW	8.
				TIME	24.92
			2	FLOW	17.
				TIME	24.92
			3	FLOW	21.
				TIME	24.92
			4	FLOW	31.
				TIME	24.92
			5	FLOW	962.
				TIME	21.50
			6	FLOW	1950.
				TIME	18.50
			** PEAK STAGES IN FEET **		
			1	STAGE	2620.53
				TIME	24.92
			2	STAGE	2621.36
				TIME	24.92
			3	STAGE	2622.00
				TIME	24.92
			4	STAGE	2624.22
				TIME	24.92
			5	STAGE	2625.50
				TIME	21.42
			6	STAGE	2625.81
				TIME	18.50
ROUTED TO	RT12	16.01	1	FLOW	8.
				TIME	24.92
			2	FLOW	17.
				TIME	24.92
			3	FLOW	21.
				TIME	24.92
			4	FLOW	29.
				TIME	24.92
			5	FLOW	962.
				TIME	21.75

			6	FLOW	1948.
				TIME	18.75
HYDROGRAPH AT	HUGHES	2.05	1	FLOW	118.
				TIME	14.42
			2	FLOW	337.
				TIME	14.17
			3	FLOW	515.
				TIME	14.17
			4	FLOW	701.
				TIME	14.17
			5	FLOW	876.
				TIME	14.17
			6	FLOW	1071.
				TIME	14.17
2 COMBINED AT	HUGHIN	18.06	1	FLOW	118.
				TIME	14.42
			2	FLOW	337.
				TIME	14.17
			3	FLOW	515.
				TIME	14.17
			4	FLOW	701.
				TIME	14.17
			5	FLOW	1056.
				TIME	21.67
			6	FLOW	2149.
				TIME	18.67
ROUTED TO	HUGHPL	18.06	1	FLOW	20.
				TIME	24.92
			2	FLOW	34.
				TIME	24.92
			3	FLOW	36.
				TIME	24.92
			4	FLOW	145.
				TIME	19.92
			5	FLOW	970.
				TIME	22.67
			6	FLOW	1976.
				TIME	19.42
			** PEAK STAGES IN FEET **		
			1	STAGE	2591.77
				TIME	24.92
			2	STAGE	2595.06
				TIME	24.92
			3	STAGE	2595.83
				TIME	24.92
			4	STAGE	2596.17
				TIME	19.92
			5	STAGE	2596.80
				TIME	22.67
			6	STAGE	2597.29
				TIME	19.33
ROUTED TO	RT13	18.06	1	FLOW	20.
				TIME	24.92
			2	FLOW	34.
				TIME	24.92

			3	FLOW	36.
				TIME	24.92
			4	FLOW	145.
				TIME	20.17
			5	FLOW	970.
				TIME	22.83
			6	FLOW	1976.
				TIME	19.50
HYDROGRAPH AT	SH846B	.47	1	FLOW	46.
				TIME	13.17
			2	FLOW	134.
				TIME	13.08
			3	FLOW	200.
				TIME	13.08
			4	FLOW	273.
				TIME	13.08
			5	FLOW	342.
				TIME	13.08
			6	FLOW	411.
				TIME	13.00
2 COMBINED AT	SH846X	18.53	1	FLOW	46.
				TIME	13.17
			2	FLOW	134.
				TIME	13.08
			3	FLOW	200.
				TIME	13.08
			4	FLOW	273.
				TIME	13.08
			5	FLOW	986.
				TIME	22.83
			6	FLOW	2004.
				TIME	19.50
HYDROGRAPH AT	CURRIE	2.54	1	FLOW	108.
				TIME	15.92
			2	FLOW	296.
				TIME	15.50
			3	FLOW	454.
				TIME	15.50
			4	FLOW	607.
				TIME	15.42
			5	FLOW	768.
				TIME	15.42
			6	FLOW	949.
				TIME	15.42
ROUTED TO	CURDET	2.54	1	FLOW	23.
				TIME	24.92
			2	FLOW	28.
				TIME	24.92
			3	FLOW	32.
				TIME	24.92
			4	FLOW	135.
				TIME	22.08
			5	FLOW	308.
				TIME	19.33
			6	FLOW	515.
				TIME	18.00

** PEAK STAGES IN FEET **

			1	STAGE	2670.29
				TIME	24.92
			2	STAGE	2671.55
				TIME	24.92
			3	STAGE	2672.52
				TIME	24.92
			4	STAGE	2673.17
				TIME	22.00
			5	STAGE	2673.34
				TIME	19.33
			6	STAGE	2673.50
				TIME	18.00
ROUTED TO	RT14	2.54	1	FLOW	23.
				TIME	24.92
			2	FLOW	28.
				TIME	24.92
			3	FLOW	31.
				TIME	24.92
			4	FLOW	135.
				TIME	22.50
			5	FLOW	308.
				TIME	19.75
			6	FLOW	515.
				TIME	18.33
HYDROGRAPH AT	BLGRAV	1.90	1	FLOW	113.
				TIME	14.25
			2	FLOW	324.
				TIME	14.08
			3	FLOW	495.
				TIME	14.08
			4	FLOW	674.
				TIME	14.08
			5	FLOW	842.
				TIME	14.00
			6	FLOW	1027.
				TIME	14.00
2 COMBINED AT	BLGIN	4.44	1	FLOW	113.
				TIME	14.25
			2	FLOW	324.
				TIME	14.08
			3	FLOW	495.
				TIME	14.08
			4	FLOW	674.
				TIME	14.08
			5	FLOW	856.
				TIME	14.08
			6	FLOW	1046.
				TIME	14.08
ROUTED TO	BLGRPL	4.44	1	FLOW	25.
				TIME	24.92
			2	FLOW	35.
				TIME	24.92
			3	FLOW	38.
				TIME	24.92

			4	FLOW	182.
				TIME	23.17
			5	FLOW	419.
				TIME	20.17
			6	FLOW	682.
				TIME	18.67

** PEAK STAGES IN FEET **

1	STAGE	2632.81
	TIME	24.92
2	STAGE	2635.60
	TIME	24.92
3	STAGE	2636.59
	TIME	24.92
4	STAGE	2637.22
	TIME	23.17
5	STAGE	2637.43
	TIME	20.17
6	STAGE	2637.62
	TIME	18.67

ROUTED TO	RT15	4.44	1	FLOW	24.
				TIME	24.92
			2	FLOW	35.
				TIME	24.92
			3	FLOW	38.
				TIME	24.92
			4	FLOW	182.
				TIME	24.00
			5	FLOW	418.
				TIME	20.83
			6	FLOW	682.
				TIME	19.25
HYDROGRAPH AT	WRIGHT	.73	1	FLOW	88.
				TIME	12.92
			2	FLOW	255.
				TIME	12.83
			3	FLOW	378.
				TIME	12.83
			4	FLOW	515.
				TIME	12.83
			5	FLOW	648.
				TIME	12.75
			6	FLOW	780.
				TIME	12.75
ROUTED TO	WRGHTP	.73	1	FLOW	4.
				TIME	24.42
			2	FLOW	11.
				TIME	24.33
			3	FLOW	15.
				TIME	24.25
			4	FLOW	18.
				TIME	22.17
			5	FLOW	20.
				TIME	24.25
			6	FLOW	23.
				TIME	24.42

			** PEAK STAGES IN FEET **		
			1	STAGE	2622.29
				TIME	24.42
			2	STAGE	2622.74
				TIME	24.25
			3	STAGE	2623.08
				TIME	24.25
			4	STAGE	2623.46
				TIME	22.00
			5	STAGE	2623.88
				TIME	24.25
			6	STAGE	2624.33
				TIME	24.42
ROUTED TO	RT16	.73	1	FLOW	4.
				TIME	24.92
			2	FLOW	11.
				TIME	24.92
			3	FLOW	15.
				TIME	24.83
			4	FLOW	18.
				TIME	22.75
			5	FLOW	20.
				TIME	24.83
			6	FLOW	23.
				TIME	24.92
HYDROGRAPH AT	B18	1.95	1	FLOW	111.
				TIME	14.42
			2	FLOW	317.
				TIME	14.25
			3	FLOW	484.
				TIME	14.25
			4	FLOW	659.
				TIME	14.17
			5	FLOW	824.
				TIME	14.17
			6	FLOW	1008.
				TIME	14.17
HYDROGRAPH AT	B19	1.60	1	FLOW	143.
				TIME	13.33
			2	FLOW	418.
				TIME	13.25
			3	FLOW	625.
				TIME	13.25
			4	FLOW	854.
				TIME	13.17
			5	FLOW	1072.
				TIME	13.17
			6	FLOW	1293.
				TIME	13.17
4 COMBINED AT	RAYLNG	8.72	1	FLOW	218.
				TIME	13.58
			2	FLOW	635.
				TIME	13.50
			3	FLOW	962.
				TIME	13.50
			4	FLOW	1321.

				TIME	13.50
			5	FLOW	1656.
				TIME	13.42
			6	FLOW	2019.
				TIME	13.42
ROUTED TO	RT17	8.72	1	FLOW	218.
				TIME	13.75
			2	FLOW	634.
				TIME	13.58
			3	FLOW	961.
				TIME	13.58
			4	FLOW	1320.
				TIME	13.58
			5	FLOW	1654.
				TIME	13.50
			6	FLOW	2017.
				TIME	13.50
HYDROGRAPH AT	BATJER	.91	1	FLOW	84.
				TIME	13.25
			2	FLOW	244.
				TIME	13.17
			3	FLOW	366.
				TIME	13.17
			4	FLOW	500.
				TIME	13.17
			5	FLOW	625.
				TIME	13.17
			6	FLOW	754.
				TIME	13.17
2 COMBINED AT	BTJOUT	9.63	1	FLOW	289.
				TIME	13.58
			2	FLOW	848.
				TIME	13.50
			3	FLOW	1283.
				TIME	13.42
			4	FLOW	1763.
				TIME	13.42
			5	FLOW	2212.
				TIME	13.42
			6	FLOW	2692.
				TIME	13.42

*** NORMAL END OF HEC-1 ***
NORMAL END OF HEC-1

APPENDIX H

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HEC1 S/N: 1090525070        HMVersion: 5.20    Data File: TL-EXST.HC1

****************************************                                                  ****************************************
*                                      *                                                  *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                  *   U.S. ARMY CORPS OF ENGINEERS       *
*             FEBRUARY 1981            *                                                  * THE HYDROLOGIC ENGINEERING CENTER    *
*           REVISED 02 AUG 88          *                                                  *        609 SECOND STREET             *
*                                      *                                                  *     DAVIS, CALIFORNIA 95616          *
*  RUN DATE  09/13/1990  TIME  11:36:44 *                                                 *                                      *
*                                      *                                                  *                                      *
****************************************                                                  ****************************************



                                                    X     X  XXXXXXX   XXXXX         X
                                                    X     X  X        X     X       XX
                                                    X     X  X        X              X
                                                    XXXXXXX  XXXX     X       XXXXX  X
                                                    X     X  X        X              X
                                                    X     X  X        X     X        X
                                                    X     X  XXXXXXX   XXXXX        XXX



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                                                 :::::::::::::::::::::::::::::::::::::::::
                                                 :::                                   :::
                                                 :::  Full Microcomputer Implementation :::
                                                 :::                by                 :::
                                                 :::        Haestad Methods, Inc.      :::
                                                 :::                                   :::
                                                 :::::::::::::::::::::::::::::::::::::::::
                                                 :::::::::::::::::::::::::::::::::::::::::

                              37 Brookside Road * Waterbury, Connecticut  06708 * (203) 755-1666



          THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

          THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
          THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
          NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
          DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
          KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM
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ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

*DIAGRAM
ID     MARTIN COUNTY FLOOD CONTROL STUDY     JOB NO. 06901-001-036
ID     HDR ENGINEERING, INC.                 AUSTIN, TEXAS
ID
ID     THREE LEAGUE ARE MAODEL TO HWY 137 CROSSING, EXISTING
ID
ID     COMPUTING 2-YR, 5-YR, 10-YR, 25-YR, 50-YR, AND 100-YR FLOOD EVENTS FOR
ID     THREE LEAGUE AREA USING PLAN OPTION IN HEC-1.
ID
ID                 PLAN 1:   2-YEAR EVENT
ID                 PLAN 2:   5-YEAR EVENT
ID                 PLAN 3:  10-YEAR EVENT
ID                 PLAN 4:  25-YEAR EVENT
ID                 PLAN 5:  50-YEAR EVENT
ID                 PLAN 6: 100-YEAR EVENT
ID
ID
IT      10                 300
IO       5       0
JP       6

KK     TL1
KM     RUNOFF HYDROGRAPH FOR TL1 SUBBASIN
PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
BA    4.65
LS       0      72
UD    1.11
KP       2
PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
KP       3
PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
KP       4
PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
KP       5
PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
KP       6
PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

KK     TL2
KM     RUNOFF HYDROGRAPH FOR TL2 SUBBASIN
PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
BA    1.04
LS       0      72
UD    0.87
KP       2
PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
KP       3
PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
KP       4
PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
KP       5
PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
KP       6
PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  52          KK   KDRAW
  53          KM    COMBINE TL1 AND TL2
  54          HC       2

  55          KK     RT1
  56          KM    ROUTE KDRAW TO K2002
  57          RK   15600  .0035    .030            TRAP      50       8

  58          KK     TL3
  59          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
  60          BA    3.11
  61          LS       0      72
  62          UD    0.62
  63          KP       2
  64          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
  65          KP       3
  66          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
  67          KP       4
  68          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
  69          KP       5
  70          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
  71          KP       6
  72          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

  73          KK   K2002
  74          KM    COMBINE RT1 WITH TL3
  75          HC       2

  76          KK     TL7
  77          KM    RUNOFF HYDROGRAPH FOR TL7 SUBBASIN
  78          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
  79          BA    3.39
  80          LS       0      72
  81          UD    0.65
  82          KP       2
  83          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
  84          KP       3
  85          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
  86          KP       4
  87          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
  88          KP       5
  89          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
  90          KP       6
  91          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

  92          KK     TL8
  93          KM    RUNOFF HYDROGRAPH FOR TL8 SUBBASIN
  94          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
  95          BA    0.55
  96          LS       0      72
  97          UD    0.28
  98          KP       2
  99          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 100          KP       3
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 101          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 102          KP       4
 103          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 104          KP       5
 105          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 106          KP       6
 107          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 108          KK    829A
 109          KM    COMBINE TL7 AND TL8
 110          HC       2

 111          KK     RT2
 112          KM    ROUTE 829A TO 2002W
 113          RK    8200   .0052    .030            TRAP      20       6

 114          KK     TL9
 115          KM    RUNOFF HYDROGRAPH FOR TL9 SUBBASIN
 116          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 117          BA    0.93
 118          LS       0      72
 119          UD    0.45
 120          KP       2
 121          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 122          KP       3
 123          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 124          KP       4
 125          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 126          KP       5
 127          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 128          KP       6
 129          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 130          KK     RT3
 131          KM    ROUTE TL9 TO 2002W
 132          RK    4000   .0073    .030            TRAP      50       8

 133          KK    TL10
 134          KM    RUNOFF HYDROGRAPH FOR TL10 SUBBASIN
 135          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 136          BA    0.96
 137          LS       0      72
 138          UD    0.38
 139          KP       2
 140          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 141          KP       3
 142          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 143          KP       4
 144          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 145          KP       5
 146          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 147          KP       6
 148          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 149          KK   2002W
 150          KM    COMBINE RT2 WITH RT3 AND TL10
 151          HC       3

 152          KK     RT4
 153          KM    ROUTE 2002W TO PXWEST
 154          RK   10000   .0052    .030            TRAP      50       8

 155          KK    TL12
 156          KM    RUNOFF HYDROGRAPH FOR TL12 SUBBASIN
 157          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 158          BA    1.60
 159          LS       0      72
 160          UD    0.96
 161          KP       2
 162          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 163          KP       3
 164          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 165          KP       4
 166          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 167          KP       5
 168          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 169          KP       6
 170          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 171          KK     RT5
 172          KM    ROUTE TL12 TO PXWEST
 173          RK    6600   .0064    .030            TRAP      50       8

 174          KK    TL13
 175          KM    RUNOFF HYDROGRAPH FOR TL13 SUBBASIN
 176          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 177          BA    3.99
 178          LS       0      72
 179          UD    1.23
 180          KP       2
 181          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 182          KP       3
 183          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 184          KP       4
 185          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 186          KP       5
 187          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 188          KP       6
 189          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 190          KK     RT6
 191          KM    ROUTE TL13 TO PXWEST
 192          RK    9600   .0052    .030            TRAP      50       8
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 193          KK    TL11
 194          KM    RUNOFF HYDROGRAPH FOR TL11 SUBBASIN
 195          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 196          BA    4.28
 197          LS       0      72
 198          UD    1.18
 199          KP       2
 200          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 201          KP       3
 202          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 203          KP       4
 204          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 205          KP       5
 206          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 207          KP       6
 208          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 209          KK  PXWEST
 210          KM    COMBINE RT5 WITH RT6 AND RT4
 211          HC       4

 212          KK    TL6A
 213          KM    RUNOFF HYDROGRAPH FOR TL6A SUBBASIN
 214          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 215          BA    2.53
 216          LS       0      72
 217          UD    0.86
 218          KP       2
 219          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 220          KP       3
 221          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 222          KP       4
 223          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 224          KP       5
 225          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 226          KP       6
 227          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 228          KK     RT7
 229          KM    ROUTE TL6A TO PXNW
 230          RK    9000   .0048    .030            TRAP      50       8

 231          KK    TL6B
 232          KM    RUNOFF HYDROGRAPH FOR TL6B SUBBASIN
 233          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 234          BA    0.85
 235          LS       0      72
 236          UD    0.46
 237          KP       2
 238          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 239          KP       3
 240          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 241          KP       4
 242          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 243          KP       5
 244          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 245          KP       6
 246          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 247          KK    PXNW
 248          KM    COMBINE RT7 WITH TL6B
 249          HC       2

 250          KK    TL4A
 251          KM    RUNOFF HYDROGRAPH FOR TL4A SUBBASIN
 252          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 253          BA    4.65
 254          LS       0      72
 255          UD    1.62
 256          KP       2
 257          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 258          KP       3
 259          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 260          KP       4
 261          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 262          KP       5
 263          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 264          KP       6
 265          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 266          KK     RT8
 267          KM    ROUTE TL4A TO PXNE
 268          RK    8400   .0045    .030            TRAP      50       8

 269          KK    TL4B
 270          KM    COMPUTE RUNOFF HYDROGRAPH FOR TL4B SUBBASIN
 271          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 272          BA    0.52
 273          LS       0      72
 274          UD    0.79
 275          KP       2
 276          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 277          KP       3
 278          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 279          KP       4
 280          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 281          KP       5
 282          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 283          KP       6
 284          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 285          KK    PXNE
 286          KM    COMBINE RT8 WITH TL4B
 287          HC       2
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


 288          KK     TL5
 289          KM    RUNOFF HYDROGRAPH FOR TL5 SUBBASIN
 290          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 291          BA    1.88
 292          LS       0      72
 293          UD    0.52
 294          KP       2
 295          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 296          KP       3
 297          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 298          KP       4
 299          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 300          KP       5
 301          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 302          KP       6
 303          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 304          KK  PLAYAX
 305          KM    COMBINE K2002 - TL5 - PXNE - PXNW - PXWEST
 306          HC       5

 307          KK  TLPLAY
 308          KM    ROUTE INFLOW HYDROGRAPH THROUGH THREE LEAGUE PLAYA
 309          RS       1    ELEV    2725
 310          SV       0     362    1172    2679    5066
 311          SQ       0       0       0   15000  100000
 312          SE    2725    2730    2735    2740    2745

 313          KK     RT9
 314          KM    ROUTE TLPLAY OUTFLOW TO ALKRD
 315          RK    4000   .0030    .030            TRAP      20       6

 316          KK    TL14
 317          KM    RUNOFF HYDROGRAPH FOR TL14 SUBBASIN
 318          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 319          BA   12.70
 320          LS       0      72
 321          UD    1.29
 322          KP       2
 323          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 324          KP       3
 325          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 326          KP       4
 327          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 328          KP       5
 329          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 330          KP       6
 331          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 332          KK    RT10
 333          RK   12000   .0040    .030            TRAP      20       6

 334          KK    TL16
 335          KM    RUNOFF HYDROGRAPH FOR TL16 SUBBASIN
 336          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 337          BA    2.86
 338          LS       0      72
 339          UD    0.90
 340          KP       2
 341          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 342          KP       3
 343          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 344          KP       4
 345          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 346          KP       5
 347          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 348          KP       6
 349          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 350          KK   ALKRD
 351          KM    COMBINE RT9 WITH RT10 AND TL16
 352          HC       3

 353          KK    RT11
 354          KM    ROUTE ALKDRD TO ALKALI
 355          RK    5000   .0020    .030            TRAP      20       6

 356          KK    TL18
 357          KM    RUNOFF HYDROGRAPH FOR TL18 SUBBASIN
 358          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 359          BA    0.62
 360          LS       0      72
 361          UD    0.51
 362          KP       2
 363          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 364          KP       3
 365          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 366          KP       4
 367          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 368          KP       5
 369          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 370          KP       6
 371          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 372          KK    TL17
 373          KM    RUNOFF HYDROGRAPH FOR TL17 SUBBASIN
 374          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 375          BA    2.42
 376          LS       0      72
 377          UD    0.50
 378          KP       2
 379          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 380          KP       3
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 381          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 382          KP       4
 383          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 384          KP       5
 385          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 386          KP       6
 387          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 388          KK  ALKALI
 389          KM    COMBINE TL18 - RT12 - TL17 AND RT11
 390          HC       3

 391          KK  ALKLAK
 392          KM    ROUTE INFLOW HYDROGRAPH THROUGH ALKALI LAKE
 393          RS       1    ELEV    2708
 394          SV       0      77     346     813    1682    3130
 395          SQ       0       0       0       0   17000  100000
 396          SE    2708    2710    2715    2720    2725    2730

 397          KK   TL20E
 398          KM    RUNOFF HYDROGRAPH FOR TL20E SUBBASIN
 399          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 400          BA    1.53
 401          LS       0      72
 402          UD    2.00
 403          KP       2
 404          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 405          KP       3
 406          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 407          KP       4
 408          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 409          KP       5
 410          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 411          KP       6
 412          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 413          KK   SP1IN
 414          KM    COMBINE ALKLAK OUTFLOW HYDROGRAPH WITH SP1IN
 415          HC       2

 416          KK  SPILL1
 417          KM    ROUTE SP1IN INFLOW HYDROGRAPH THROUGH SPILL1 PLAYA
 418          RS       1    ELEV    2710
 419          SV       0     101     369     837    1495
 420          SQ       0       0       0   14000  100000
 421          SE    2710    2715    2720    2725    2730

 422          KK   TL20F
 423          KM    RUNOFF HYDROGRAPH FOR TL20F SUBBASIN
 424          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 425          BA    0.66
 426          LS       0      72
 427          UD    0.74
 428          KP       2
 429          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 430          KP       3
 431          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 432          KP       4
 433          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 434          KP       5
 435          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 436          KP       6
 437          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 438          KK   SP2IN
 439          KM    COMBINE SPILL1 OUTFLOW HYDROGRAPH WITH TL20F
 440          HC       2

 441          KK  SPILL2
 442          KM    ROUTE SP2IN INFLOW HYDROGRAPH THROUGH SPILL2 PLAYA
 443          RS       1    ELEV    2698
 444          SV       0      14      70     168     350     875
 445          SQ       0       0       0       0    5000  100000
 446          SE    2698    2700    2705    2710    2715    2720

 447          KK    TL19
 448          KM    RUNOFF HYDROGRAPH FOR TL19 SUBBASIN
 449          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 450          BA    4.73
 451          LS       0      72
 452          UD    2.37
 453          KP       2
 454          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 455          KP       3
 456          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 457          KP       4
 458          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 459          KP       5
 460          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 461          KP       6
 462          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 463          KK    RT13
 464          RK    2000   .0050   0.030            TRAP      50       8

 465          KK   TL20A
 466          KM    RUNOFF HYDROGRAPH FOR TL20A SUBBASIN
 467          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 468          BA    1.17
 469          LS       0      72
 470          UD    0.75
 471          KP       2
 472          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 473          KP       3
 474          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 475          KP       4
 476          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 477          KP       5
 478          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 479          KP       6
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LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 480           PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 481           KK   TL1IN
 482           KM    COMBINE RT13 WITH TL20A
 483           HC       2

 484           KK  TL20-1
 485           KM    ROUTE TL1IN INFLOW HYDROGRAPH THROUGH TL20-1 PLAYA
 486           RS       1    ELEV    2755
 487           SV       0     351    1286    3240
 488           SQ       0       0       0  100000
 489           SE    2755    2760    2765    2770

 490           KK    TL20B
 491           KM    RUNOFF HYDROGRAPH FOR TL20B SUBBASIN
 492           PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 493           BA    0.40
 494           LS       0      72
 495           UD    0.67
 496           KP       2
 497           PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 498           KP       3
 499           PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 500           KP       4
 501           PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 502           KP       5
 503           PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 504           KP       6
 505           PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 506           KK    TL2IN
 507           KM    COMBINE TL20-1 OUTFLOW HYDROGRAPH WITH TL20B
 508           HC       2

 509           KK  TL20-2
 510           KM    ROUTE TL2IN INFLOW HYDROGRAPH THROUGH TL20-2 PLAYA
 511           RS       1    ELEV    2750
 512           SV       0      56     212     537
 513           SQ       0       0       0  100000
 514           SE    2750    2755    2760    2765

 515           KK    RT15
 516           KM    ROUTE TL20-2 TO TL3IN
 517           RK    6800   .0015    .030            TRAP      50       8

 518           KK    TL20C
 519           KM    RUNOFF HYDROGRAPH FOR TL20C SUBBASIN
 520           PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 521           BA    3.48
 522           LS       0      72
 523           UD    0.67
 524           KP       2
 525           PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 526           KP       3
 527           PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 528          KP       4
 529          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 530          KP       5
 531          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 532          KP       6
 533          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 534          KK   TL3IN
 535          KM    COMBINE TL20-2 OUTFLOW HYDROGRAPH WITH TL20C
 536          HC       2

 537          KK  TL20-3
 538          KM    ROUTE TL3IN INFLOW HYDROGRAPH THROUGH TL20-3 PLAYA
 539          RS       1    ELEV    2740
 540          SV       0    1198    4620
 541          SQ       0       0  100000
 542          SE    2740    2745    2750

 543          KK    RT16
 544          KM    ROUTE TL20-3 OUTFLOW HYDROGRAPH TO TL4IN
 545          RK    8000   .0038   0.030            TRAP      50       8

 546          KK   TL20D
 547          KM    RUNOFF HYDROGRAPH FOR TL20D SUBBASIN
 548          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 549          BA    2.08
 550          LS       0      72
 551          UD    2.00
 552          KP       2
 553          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 554          KP       3
 555          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 556          KP       4
 557          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 558          KP       5
 559          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 560          KP       6
 561          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 562          KK   TL4IN
 563          KM    COMBINE TL20-3 OUTFLOW HYDROGRAPH WITH TL20D
 564          HC       2

 565          KK  TL20-4
 566          KM    ROUTE TL4IN INFLOW HYDROGRAPH THROUGH TL20-4 PLAYA
 567          RS       1    ELEV    2700
 568          SV       0     112     354     880    1929    3674
 569          SQ       0       0       0       0  100000  200000
 570          SE    2700    2705    2710    2715    2720    2725
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 571          KK   TL20G
 572          KM    RUNOFF HYDROGRAPH FOR TL20G SUBBASIN
 573          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 574          BA    0.41
 575          LS       0      72
 576          UD    1.00
 577          KP       2
 578          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 579          KP       3
 580          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 581          KP       4
 582          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 583          KP       5
 584          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 585          KP       6
 586          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 587          KK    4OUT
 588          KM    COMBINE TL20G WITH TL20A AND SPILL2
 589          HC       3

 590          KK    RT14
 591          KM    ROUTE 4OUT TO HWY137 CROSSING
 592          RK    9400   .0050   0.030            TRAP      20       6

 593          KK   TL20H
 594          KM    RUNOFF HYDROGRAPH FOR TL20H SUBBASIN
 595          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 596          BA    2.67
 597          LS       0      72
 598          UD    1.56
 599          KP       2
 600          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 601          KP       3
 602          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 603          KP       4
 604          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 605          KP       5
 606          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 607          KP       6
 608          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 609          KK  HW137X
 610          KM    COMBINE RT14 WITH TL20H
 611          HC       2
 612          ZZ
```

```
                SCHEMATIC DIAGRAM OF STREAM NETWORK
INPUT
 LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

  NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

   20         TL1
                .
                .
   36           .         TL2
                .           .
                .           .
   52       KDRAW............
                V
                V
   55         RT1
                .
                .
   58           .         TL3
                .           .
                .           .
   73       K2002............
                .
                .
   76           .         TL7
                .           .
                .           .
   92           .           .         TL8
                .           .           .
                .           .           .
  108           .        829A............
                .           V
                .           V
  111           .         RT2
                .           .
                .           .
  114           .           .         TL9
                .           .           V
                .           .           V
  130           .           .         RT3
                .           .           .
                .           .           .
  133           .           .           .        TL10
                .           .           .           .
                .           .           .           .
  149           .       2002W........................
                .           V
                .           V
  152           .         RT4
                .           .
                .           .
  155           .           .        TL12
                .           .           V
                .           .           V
  171           .           .         RT5
                .           .           .
                .           .           .
  174           .           .           .        TL13
                .           .           .           V
```

```
               .           .           .           V
190            .           .           .         RT6
               .           .           .           .
               .           .           .           .
193            .           .           .           .        TL11
               .           .           .           .           .
               .           .           .           .           .
209            .     PXWEST.....................................
               .           .
               .           .
212            .           .        TL6A
               .           .           V
               .           .           V
228            .           .         RT7
               .           .           .
               .           .           .
231            .           .           .        TL6B
               .           .           .           .
               .           .           .           .
247            .           .        PXNW............
               .           .           .
               .           .           .
250            .           .           .        TL4A
               .           .           .           V
               .           .           .           V
266            .           .           .         RT8
               .           .           .           .
               .           .           .           .
269            .           .           .           .        TL4B
               .           .           .           .           .
               .           .           .           .           .
285            .           .           .        PXNE............
               .           .           .           .
               .           .           .           .
288            .           .           .           .         TL5
               .           .           .           .           .
               .           .           .           .           .
304       PLAYAX................................................
               V
               V
307       TLPLAY
               V
               V
313          RT9
               .
               .
316            .        TL14
               .           V
               .           V
332            .        RT10
               .           .
               .           .
334            .           .        TL16
               .           .           .
               .           .           .
350        ALKRD........................
               V
               V
353         RT11
               .
```

```
                .
 356            .       TL18
                .          .
                .          .
 372            .          .        TL17
                .          .           .
                .          .           .
 388       ALKALI.......................
                V
                V
 391       ALKLAK
                .
                .
 397            .      TL20E
                .          .
                .          .
 413        SP1IN............
                V
                V
 416       SPILL1
                .
                .
 422            .      TL20F
                .          .
                .          .
 438        SP2IN............
                V
                V
 441       SPILL2
                .
                .
 447            .       TL19
                .          V
                .          V
 463            .       RT13
                .          .
                .          .
 465            .          .       TL20A
                .          .           .
                .          .           .
 481            .      TL1IN............
                .          V
                .          V
 484            .     TL20-1
                .          .
                .          .
 490            .          .       TL20B
                .          .           .
                .          .           .
 506            .      TL2IN............
                .          V
                .          V
 509            .     TL20-2
                .          V
                .          V
 515            .       RT15
                .          .
                .          .
 518            .          .       TL20C
                .          .           .
```

```
                .         .         .
534             .       TL3IN............
                .         V
                .         V
537             .      TL20-3
                .         V
                .         V
543             .       RT16
                .         .
                .         .
546             .         .       TL20D
                .         .         .
                .         .         .
562             .       TL4IN............
                .         V
                .         V
565             .      TL20-4
                .         .
                .         .
571             .         .       TL20G
                .         .         .
                .         .         .
587          4OUT.......................
                V
                V
590          RT14
                .
                .
593             .       TL20H
                .         .
                .         .
609        HW137X............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
HEC1 S/N: 1090525070       HMVersion: 5.20    Data File: TL-EXST.HC1

*****************************************                        ****************************************
*                                       *                        *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                        *   U.S. ARMY CORPS OF ENGINEERS       *
*             FEBRUARY 1981             *                        * THE HYDROLOGIC ENGINEERING CENTER    *
*           REVISED 02 AUG 88           *                        *         609 SECOND STREET            *
*                                       *                        *      DAVIS, CALIFORNIA 95616         *
*  RUN DATE  09/13/1990  TIME  11:36:44 *                        *                                      *
*                                       *                        *                                      *
*****************************************                        ****************************************
```

```
                   MARTIN COUNTY FLOOD CONTROL STUDY     JOB NO. 06901-001-036
                   HDR ENGINEERING, INC.                 AUSTIN, TEXAS

                   THREE LEAGUE ARE MAODEL TO HWY 137 CROSSING

                   COMPUTING 2-YR, 5-YR, 10-YR, 25-YR, 50-YR, AND 100-YR FLOOD EVENTS FOR
                   THREE LEAGUE AREA USING PLAN OPTION IN HEC-1.

                             PLAN 1:   2-YEAR EVENT
                             PLAN 2:   5-YEAR EVENT
                             PLAN 3:  10-YEAR EVENT
                             PLAN 4:  25-YEAR EVENT
                             PLAN 5:  50-YEAR EVENT
                             PLAN 6: 100-YEAR EVENT
```

```
  18 IO        OUTPUT CONTROL VARIABLES
                    IPRNT          5  PRINT CONTROL
                    IPLOT          0  PLOT CONTROL
                    QSCAL         0.  HYDROGRAPH PLOT SCALE

     IT        HYDROGRAPH TIME DATA
                     NMIN         10  MINUTES IN COMPUTATION INTERVAL
                    IDATE      1   0  STARTING DATE
                    ITIME       0000  STARTING TIME
                       NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                   NDDATE      3   0  ENDING DATE
                   NDTIME       0150  ENDING TIME
                    ICENT         19  CENTURY MARK

                COMPUTATION INTERVAL    .17 HOURS
                     TOTAL TIME BASE  49.83 HOURS

         ENGLISH UNITS
              DRAINAGE AREA          SQUARE MILES
              PRECIPITATION DEPTH    INCHES
              LENGTH, ELEVATION      FEET
              FLOW                   CUBIC FEET PER SECOND
              STORAGE VOLUME         ACRE-FEET
              SURFACE AREA           ACRES
              TEMPERATURE            DEGREES FAHRENHEIT
```

```
JP          MULTI-PLAN OPTION
                  NPLAN           6  NUMBER OF PLANS

JR          MULTI-RATIO OPTION
                RATIOS OF RUNOFF
               1.00


    *** FLOGRD - MAXIMUM NUMBER OF DX INTERVALS REACHED. MDX= 51
     THIS MAY AFFECT ACCURACY OF KW  SOLUTION. TO REDUCE ERRORS SHORTEN CHANNEL ELEMENT = 3
```

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO FLOWS RATIO 1 1.00
HYDROGRAPH AT	TL1	4.65	1	FLOW	320.
				TIME	13.50
			2	FLOW	963.
				TIME	13.33
			3	FLOW	1458.
				TIME	13.33
			4	FLOW	2003.
				TIME	13.33
			5	FLOW	2506.
				TIME	13.33
			6	FLOW	3035.
				TIME	13.33
HYDROGRAPH AT	TL2	1.04	1	FLOW	83.
				TIME	13.17
			2	FLOW	249.
				TIME	13.17
			3	FLOW	375.
				TIME	13.00
			4	FLOW	515.
				TIME	13.00
			5	FLOW	651.
				TIME	13.00
			6	FLOW	786.
				TIME	13.00
2 COMBINED AT	KDRAW	5.69	1	FLOW	396.
				TIME	13.33
			2	FLOW	1198.
				TIME	13.33
			3	FLOW	1808.
				TIME	13.33
			4	FLOW	2481.
				TIME	13.33
			5	FLOW	3109.
				TIME	13.17
			6	FLOW	3768.
				TIME	13.17
ROUTED TO	RT1	5.69	1	FLOW	396.
				TIME	14.17
			2	FLOW	1188.
				TIME	13.83
			3	FLOW	1807.
				TIME	13.83
			4	FLOW	2470.
				TIME	13.67
			5	FLOW	3102.
				TIME	13.67

			6	FLOW	3752.
				TIME	13.67
HYDROGRAPH AT	TL3	3.11	1	FLOW	302.
				TIME	12.83
			2	FLOW	908.
				TIME	12.83
			3	FLOW	1353.
				TIME	12.83
			4	FLOW	1848.
				TIME	12.83
			5	FLOW	2331.
				TIME	12.83
			6	FLOW	2794.
				TIME	12.83
2 COMBINED AT	K2002	8.80	1	FLOW	514.
				TIME	14.17
			2	FLOW	1527.
				TIME	13.67
			3	FLOW	2403.
				TIME	13.67
			4	FLOW	3352.
				TIME	13.50
			5	FLOW	4201.
				TIME	13.50
			6	FLOW	5165.
				TIME	13.33
HYDROGRAPH AT	TL7	3.39	1	FLOW	319.
				TIME	13.00
			2	FLOW	966.
				TIME	12.83
			3	FLOW	1445.
				TIME	12.83
			4	FLOW	1977.
				TIME	12.83
			5	FLOW	2496.
				TIME	12.83
			6	FLOW	2998.
				TIME	12.83
HYDROGRAPH AT	TL8	.55	1	FLOW	77.
				TIME	12.50
			2	FLOW	221.
				TIME	12.50
			3	FLOW	333.
				TIME	12.33
			4	FLOW	456.
				TIME	12.33
			5	FLOW	568.
				TIME	12.33
			6	FLOW	689.
				TIME	12.33
2 COMBINED AT	829A	3.94	1	FLOW	368.
				TIME	12.83
			2	FLOW	1099.
				TIME	12.83
			3	FLOW	1636.

				TIME	12.83
			4	FLOW	2235.
				TIME	12.83
			5	FLOW	2839.
				TIME	12.67
			6	FLOW	3422.
				TIME	12.67
ROUTED TO	RT2	3.94	1	FLOW	367.
				TIME	13.17
			2	FLOW	1091.
				TIME	13.00
			3	FLOW	1633.
				TIME	13.00
			4	FLOW	2235.
				TIME	13.00
			5	FLOW	2833.
				TIME	12.83
			6	FLOW	3420.
				TIME	12.83
HYDROGRAPH AT	TL9	.93	1	FLOW	107.
				TIME	12.67
			2	FLOW	316.
				TIME	12.67
			3	FLOW	467.
				TIME	12.67
			4	FLOW	636.
				TIME	12.67
			5	FLOW	804.
				TIME	12.67
			6	FLOW	961.
				TIME	12.50
ROUTED TO	RT3	.93	1	FLOW	103.
				TIME	12.83
			2	FLOW	312.
				TIME	12.83
			3	FLOW	460.
				TIME	12.67
			4	FLOW	631.
				TIME	12.67
			5	FLOW	798.
				TIME	12.67
			6	FLOW	961.
				TIME	12.67
HYDROGRAPH AT	TL10	.96	1	FLOW	117.
				TIME	12.67
			2	FLOW	351.
				TIME	12.50
			3	FLOW	526.
				TIME	12.50
			4	FLOW	718.
				TIME	12.50
			5	FLOW	905.
				TIME	12.50
			6	FLOW	1088.
				TIME	12.50

3 COMBINED AT	2002W	5.83	1	FLOW	522.
				TIME	13.00
			2	FLOW	1604.
				TIME	12.83
			3	FLOW	2431.
				TIME	12.83
			4	FLOW	3349.
				TIME	12.83
			5	FLOW	4257.
				TIME	12.83
			6	FLOW	5105.
				TIME	12.83
ROUTED TO	RT4	5.83	1	FLOW	520.
				TIME	13.50
			2	FLOW	1596.
				TIME	13.17
			3	FLOW	2383.
				TIME	13.17
			4	FLOW	3308.
				TIME	13.00
			5	FLOW	4236.
				TIME	13.00
			6	FLOW	5101.
				TIME	13.00
HYDROGRAPH AT	TL12	1.60	1	FLOW	121.
				TIME	13.33
			2	FLOW	364.
				TIME	13.17
			3	FLOW	549.
				TIME	13.17
			4	FLOW	753.
				TIME	13.17
			5	FLOW	945.
				TIME	13.17
			6	FLOW	1141.
				TIME	13.17
ROUTED TO	RT5	1.60	1	FLOW	120.
				TIME	13.67
			2	FLOW	361.
				TIME	13.50
			3	FLOW	541.
				TIME	13.33
			4	FLOW	747.
				TIME	13.33
			5	FLOW	941.
				TIME	13.33
			6	FLOW	1139.
				TIME	13.33
HYDROGRAPH AT	TL13	3.99	1	FLOW	257.
				TIME	13.67
			2	FLOW	772.
				TIME	13.50
			3	FLOW	1171.
				TIME	13.50
			4	FLOW	1608.
				TIME	13.50

			5	FLOW	2007.
				TIME	13.50
			6	FLOW	2435.
				TIME	13.50
ROUTED TO	RT6	3.99	1	FLOW	256.
				TIME	14.17
			2	FLOW	771.
				TIME	13.83
			3	FLOW	1165.
				TIME	13.83
			4	FLOW	1597.
				TIME	13.67
			5	FLOW	2005.
				TIME	13.67
			6	FLOW	2435.
				TIME	13.67
HYDROGRAPH AT	TL11	4.28	1	FLOW	282.
				TIME	13.50
			2	FLOW	848.
				TIME	13.50
			3	FLOW	1284.
				TIME	13.50
			4	FLOW	1767.
				TIME	13.33
			5	FLOW	2220.
				TIME	13.33
			6	FLOW	2694.
				TIME	13.33
4 COMBINED AT	PXWEST	15.70	1	FLOW	1110.
				TIME	13.67
			2	FLOW	3325.
				TIME	13.33
			3	FLOW	5026.
				TIME	13.33
			4	FLOW	6882.
				TIME	13.33
			5	FLOW	8636.
				TIME	13.17
			6	FLOW	10459.
				TIME	13.17
HYDROGRAPH AT	TL6A	2.53	1	FLOW	204.
				TIME	13.17
			2	FLOW	609.
				TIME	13.00
			3	FLOW	920.
				TIME	13.00
			4	FLOW	1264.
				TIME	13.00
			5	FLOW	1596.
				TIME	13.00
			6	FLOW	1926.
				TIME	13.00
ROUTED TO	RT7	2.53	1	FLOW	204.
				TIME	13.67
			2	FLOW	609.

				TIME	13.50
			3	FLOW	918.
				TIME	13.33
			4	FLOW	1258.
				TIME	13.33
			5	FLOW	1576.
				TIME	13.33
			6	FLOW	1895.
				TIME	13.33
HYDROGRAPH AT	TL6B	.85	1	FLOW	97.
				TIME	12.67
			2	FLOW	287.
				TIME	12.67
			3	FLOW	424.
				TIME	12.67
			4	FLOW	578.
				TIME	12.67
			5	FLOW	731.
				TIME	12.67
			6	FLOW	873.
				TIME	12.67
2 COMBINED AT	PXNW	3.38	1	FLOW	239.
				TIME	13.67
			2	FLOW	733.
				TIME	13.33
			3	FLOW	1114.
				TIME	13.33
			4	FLOW	1543.
				TIME	13.17
			5	FLOW	1937.
				TIME	13.17
			6	FLOW	2351.
				TIME	13.17
HYDROGRAPH AT	TL4A	4.65	1	FLOW	250.
				TIME	14.17
			2	FLOW	741.
				TIME	14.00
			3	FLOW	1135.
				TIME	13.83
			4	FLOW	1560.
				TIME	13.83
			5	FLOW	1955.
				TIME	13.83
			6	FLOW	2388.
				TIME	13.83
ROUTED TO	RT8	4.65	1	FLOW	250.
				TIME	14.67
			2	FLOW	740.
				TIME	14.17
			3	FLOW	1135.
				TIME	14.17
			4	FLOW	1555.
				TIME	14.17
			5	FLOW	1943.
				TIME	14.17
			6	FLOW	2377.

				TIME	14.00
HYDROGRAPH AT	TL4B	.52	1	FLOW	44.
				TIME	13.17
			2	FLOW	133.
				TIME	13.00
			3	FLOW	199.
				TIME	13.00
			4	FLOW	273.
				TIME	13.00
			5	FLOW	343.
				TIME	13.00
			6	FLOW	413.
				TIME	13.00
2 COMBINED AT	PXNE	5.17	1	FLOW	269.
				TIME	14.50
			2	FLOW	793.
				TIME	14.17
			3	FLOW	1218.
				TIME	14.17
			4	FLOW	1664.
				TIME	14.00
			5	FLOW	2092.
				TIME	14.00
			6	FLOW	2563.
				TIME	14.00
HYDROGRAPH AT	TL5	1.88	1	FLOW	200.
				TIME	12.83
			2	FLOW	600.
				TIME	12.67
			3	FLOW	897.
				TIME	12.67
			4	FLOW	1226.
				TIME	12.67
			5	FLOW	1552.
				TIME	12.67
			6	FLOW	1863.
				TIME	12.67
5 COMBINED AT	PLAYAX	34.93	1	FLOW	2031.
				TIME	14.00
			2	FLOW	6331.
				TIME	13.50
			3	FLOW	9743.
				TIME	13.50
			4	FLOW	13577.
				TIME	13.33
			5	FLOW	17015.
				TIME	13.33
			6	FLOW	20725.
				TIME	13.17
ROUTED TO	TLPLAY	34.93	1	FLOW	0.
				TIME	.17
			2	FLOW	1432.
				TIME	17.67
			3	FLOW	3638.
				TIME	15.67

			4	FLOW	5958.
				TIME	15.00
			5	FLOW	8641.
				TIME	14.67
			6	FLOW	11643.
				TIME	14.67

** PEAK STAGES IN FEET **

1	STAGE	2732.73
	TIME	49.67
2	STAGE	2735.48
	TIME	17.67
3	STAGE	2736.21
	TIME	15.67
4	STAGE	2736.99
	TIME	15.00
5	STAGE	2737.88
	TIME	14.67
6	STAGE	2738.88
	TIME	14.67

ROUTED TO	RT9	34.93	1	FLOW	0.
				TIME	.17
			2	FLOW	1431.
				TIME	17.67
			3	FLOW	3635.
				TIME	15.83
			4	FLOW	5941.
				TIME	15.00
			5	FLOW	8641.
				TIME	14.83
			6	FLOW	11639.
				TIME	14.67
HYDROGRAPH AT	TL14	12.70	1	FLOW	793.
				TIME	13.67
			2	FLOW	2375.
				TIME	13.50
			3	FLOW	3617.
				TIME	13.50
			4	FLOW	4973.
				TIME	13.50
			5	FLOW	6226.
				TIME	13.50
			6	FLOW	7565.
				TIME	13.50
ROUTED TO	RT10	12.70	1	FLOW	789.
				TIME	14.17
			2	FLOW	2371.
				TIME	13.83
			3	FLOW	3600.
				TIME	13.83
			4	FLOW	4930.
				TIME	13.83
			5	FLOW	6190.
				TIME	13.67
			6	FLOW	7535.
				TIME	13.67

HYDROGRAPH AT	TL16	2.86	1	FLOW	224.
				TIME	13.17
			2	FLOW	675.
				TIME	13.17
			3	FLOW	1012.
				TIME	13.17
			4	FLOW	1387.
				TIME	13.17
			5	FLOW	1747.
				TIME	13.00
			6	FLOW	2113.
				TIME	13.00
3 COMBINED AT	ALKRD	50.49	1	FLOW	931.
				TIME	14.00
			2	FLOW	2810.
				TIME	13.67
			3	FLOW	5591.
				TIME	15.33
			4	FLOW	9536.
				TIME	14.50
			5	FLOW	13810.
				TIME	14.33
			6	FLOW	18519.
				TIME	14.17
ROUTED TO	RT11	50.49	1	FLOW	928.
				TIME	14.17
			2	FLOW	2809.
				TIME	13.83
			3	FLOW	5586.
				TIME	15.33
			4	FLOW	9500.
				TIME	14.67
			5	FLOW	13790.
				TIME	14.33
			6	FLOW	18431.
				TIME	14.17
HYDROGRAPH AT	TL18	.62	1	FLOW	66.
				TIME	12.83
			2	FLOW	200.
				TIME	12.67
			3	FLOW	299.
				TIME	12.67
			4	FLOW	408.
				TIME	12.67
			5	FLOW	516.
				TIME	12.67
			6	FLOW	619.
				TIME	12.67
HYDROGRAPH AT	TL17	2.42	1	FLOW	261.
				TIME	12.67
			2	FLOW	788.
				TIME	12.67
			3	FLOW	1175.
				TIME	12.67
			4	FLOW	1604.
				TIME	12.67

			5	FLOW	2030.
				TIME	12.67
			6	FLOW	2433.
				TIME	12.67
3 COMBINED AT	ALKALI	53.53	1	FLOW	1035.
				TIME	14.17
			2	FLOW	3070.
				TIME	13.83
			3	FLOW	5816.
				TIME	15.33
			4	FLOW	9817.
				TIME	14.50
			5	FLOW	14270.
				TIME	14.33
			6	FLOW	19114.
				TIME	14.17
ROUTED TO	ALKLAK	53.53	1	FLOW	0.
				TIME	.17
			2	FLOW	1967.
				TIME	18.83
			3	FLOW	5060.
				TIME	16.50
			4	FLOW	8294.
				TIME	15.67
			5	FLOW	12254.
				TIME	15.33
			6	FLOW	16651.
				TIME	15.00
			** PEAK STAGES IN FEET **		
			1	STAGE	2715.89
				TIME	43.33
			2	STAGE	2720.58
				TIME	18.83
			3	STAGE	2721.49
				TIME	16.50
			4	STAGE	2722.44
				TIME	15.67
			5	STAGE	2723.60
				TIME	15.33
			6	STAGE	2724.90
				TIME	15.00
HYDROGRAPH AT	TL20E	1.53	1	FLOW	72.
				TIME	14.67
			2	FLOW	210.
				TIME	14.33
			3	FLOW	325.
				TIME	14.33
			4	FLOW	443.
				TIME	14.33
			5	FLOW	556.
				TIME	14.33
			6	FLOW	682.
				TIME	14.33
2 COMBINED AT	SP1IN	55.06	1	FLOW	72.
				TIME	14.67

			2	FLOW	2029.
				TIME	18.83
			3	FLOW	5239.
				TIME	16.33
			4	FLOW	8594.
				TIME	15.50
			5	FLOW	12693.
				TIME	15.17
			6	FLOW	17257.
				TIME	15.00
ROUTED TO	SPILL1	55.06	1	FLOW	0.
				TIME	.17
			2	FLOW	1739.
				TIME	20.67
			3	FLOW	4813.
				TIME	17.17
			4	FLOW	8039.
				TIME	16.33
			5	FLOW	12024.
				TIME	15.83
			6	FLOW	17203.
				TIME	15.17
			** PEAK STAGES IN FEET **		
			1	STAGE	2711.75
				TIME	32.83
			2	STAGE	2720.62
				TIME	20.67
			3	STAGE	2721.72
				TIME	17.17
			4	STAGE	2722.87
				TIME	16.33
			5	STAGE	2724.29
				TIME	15.83
			6	STAGE	2725.19
				TIME	15.17
HYDROGRAPH AT	TL20F	.66	1	FLOW	58.
				TIME	13.00
			2	FLOW	174.
				TIME	13.00
			3	FLOW	260.
				TIME	13.00
			4	FLOW	356.
				TIME	13.00
			5	FLOW	451.
				TIME	12.83
			6	FLOW	544.
				TIME	12.83
2 COMBINED AT	SP2IN	55.72	1	FLOW	58.
				TIME	13.00
			2	FLOW	1754.
				TIME	20.67
			3	FLOW	4841.
				TIME	17.17
			4	FLOW	8094.
				TIME	16.33
			5	FLOW	12095.

				TIME	15.83
			6	FLOW	17318.
				TIME	15.17
ROUTED TO	SPILL2	55.72	1	FLOW	0.
				TIME	.17
			2	FLOW	1567.
				TIME	22.00
			3	FLOW	4469.
				TIME	18.00
			4	FLOW	8106.
				TIME	16.17
			5	FLOW	12069.
				TIME	15.83
			6	FLOW	17289.
				TIME	15.33
			** PEAK STAGES IN FEET **		
			1	STAGE	2700.11
				TIME	27.17
			2	STAGE	2711.57
				TIME	22.00
			3	STAGE	2714.47
				TIME	18.00
			4	STAGE	2715.16
				TIME	16.17
			5	STAGE	2715.37
				TIME	15.83
			6	STAGE	2715.65
				TIME	15.33
HYDROGRAPH AT	TL19	4.73	1	FLOW	202.
				TIME	15.17
			2	FLOW	577.
				TIME	14.83
			3	FLOW	892.
				TIME	14.83
			4	FLOW	1209.
				TIME	14.67
			5	FLOW	1525.
				TIME	14.67
			6	FLOW	1881.
				TIME	14.67
ROUTED TO	RT13	4.73	1	FLOW	202.
				TIME	15.33
			2	FLOW	576.
				TIME	14.83
			3	FLOW	891.
				TIME	14.83
			4	FLOW	1207.
				TIME	14.83
			5	FLOW	1522.
				TIME	14.67
			6	FLOW	1877.
				TIME	14.67
HYDROGRAPH AT	TL20A	1.17	1	FLOW	103.
				TIME	13.00
			2	FLOW	308.

				TIME	13.00
			3	FLOW	459.
				TIME	13.00
			4	FLOW	628.
				TIME	13.00
			5	FLOW	792.
				TIME	12.83
			6	FLOW	957.
				TIME	12.83
2 COMBINED AT	TL1IN	5.90	1	FLOW	239.
				TIME	15.17
			2	FLOW	661.
				TIME	14.83
			3	FLOW	1020.
				TIME	14.67
			4	FLOW	1355.
				TIME	14.67
			5	FLOW	1723.
				TIME	14.50
			6	FLOW	2137.
				TIME	14.50
ROUTED TO	TL20-1	5.90	1	FLOW	0.
				TIME	.17
			2	FLOW	0.
				TIME	.17
			3	FLOW	0.
				TIME	.17
			4	FLOW	0.
				TIME	.17
			5	FLOW	0.
				TIME	.17
			6	FLOW	0.
				TIME	.17
			** PEAK STAGES IN FEET **		
			1	STAGE	2756.94
				TIME	34.83
			2	STAGE	2760.02
				TIME	34.83
			3	STAGE	2760.90
				TIME	34.33
			4	STAGE	2761.78
				TIME	34.67
			5	STAGE	2762.78
				TIME	35.67
			6	STAGE	2763.81
				TIME	35.67
HYDROGRAPH AT	TL20B	.40	1	FLOW	37.
				TIME	13.00
			2	FLOW	112.
				TIME	12.83
			3	FLOW	168.
				TIME	12.83
			4	FLOW	230.
				TIME	12.83
			5	FLOW	291.
				TIME	12.83

			6	FLOW	350.
				TIME	12.83
2 COMBINED AT	TL2IN	6.30	1	FLOW	37.
				TIME	13.00
			2	FLOW	112.
				TIME	12.83
			3	FLOW	168.
				TIME	12.83
			4	FLOW	230.
				TIME	12.83
			5	FLOW	291.
				TIME	12.83
			6	FLOW	350.
				TIME	12.83
ROUTED TO	TL20-2	6.30	1	FLOW	0.
				TIME	.17
			2	FLOW	0.
				TIME	.17
			3	FLOW	0.
				TIME	.17
			4	FLOW	0.
				TIME	.17
			5	FLOW	0.
				TIME	.17
			6	FLOW	0.
				TIME	.17
			** PEAK STAGES IN FEET **		
			1	STAGE	2750.82
				TIME	26.33
			2	STAGE	2752.15
				TIME	26.50
			3	STAGE	2753.15
				TIME	27.00
			4	STAGE	2754.14
				TIME	27.00
			5	STAGE	2755.10
				TIME	26.33
			6	STAGE	2755.52
				TIME	27.17
ROUTED TO	RT15	6.30	1	FLOW	0.
				TIME	.17
			2	FLOW	0.
				TIME	.17
			3	FLOW	0.
				TIME	.17
			4	FLOW	0.
				TIME	.17
			5	FLOW	0.
				TIME	.17
			6	FLOW	0.
				TIME	.17
HYDROGRAPH AT	TL20C	3.48	1	FLOW	324.
				TIME	13.00
			2	FLOW	975.
				TIME	12.83

			3	FLOW	1462.
				TIME	12.83
			4	FLOW	2002.
				TIME	12.83
			5	FLOW	2530.
				TIME	12.83
			6	FLOW	3042.
				TIME	12.83
2 COMBINED AT	TL3IN	9.78	1	FLOW	324.
				TIME	13.00
			2	FLOW	975.
				TIME	12.83
			3	FLOW	1462.
				TIME	12.83
			4	FLOW	2002.
				TIME	12.83
			5	FLOW	2530.
				TIME	12.83
			6	FLOW	3042.
				TIME	12.83
ROUTED TO	TL20-3	9.78	1	FLOW	0.
				TIME	.17
			2	FLOW	0.
				TIME	.17
			3	FLOW	0.
				TIME	.17
			4	FLOW	0.
				TIME	.17
			5	FLOW	0.
				TIME	.17
			6	FLOW	0.
				TIME	.17
			** PEAK STAGES IN FEET **		
			1	STAGE	2740.34
				TIME	26.00
			2	STAGE	2740.87
				TIME	26.67
			3	STAGE	2741.28
				TIME	27.00
			4	STAGE	2741.68
				TIME	26.50
			5	STAGE	2742.14
				TIME	26.50
			6	STAGE	2742.62
				TIME	27.00
ROUTED TO	RT16	9.78	1	FLOW	0.
				TIME	.17
			2	FLOW	0.
				TIME	.17
			3	FLOW	0.
				TIME	.17
			4	FLOW	0.
				TIME	.17
			5	FLOW	0.
				TIME	.17
			6	FLOW	0.

				TIME	.17
HYDROGRAPH AT	TL20D	2.08	1	FLOW	98.
				TIME	14.67
			2	FLOW	286.
				TIME	14.33
			3	FLOW	441.
				TIME	14.33
			4	FLOW	602.
				TIME	14.33
			5	FLOW	756.
				TIME	14.33
			6	FLOW	928.
				TIME	14.33
2 COMBINED AT	TL4IN	11.86	1	FLOW	98.
				TIME	14.67
			2	FLOW	286.
				TIME	14.33
			3	FLOW	441.
				TIME	14.33
			4	FLOW	602.
				TIME	14.33
			5	FLOW	756.
				TIME	14.33
			6	FLOW	928.
				TIME	14.33
ROUTED TO	TL20-4	11.86	1	FLOW	0.
				TIME	.17
			2	FLOW	0.
				TIME	.17
			3	FLOW	0.
				TIME	.17
			4	FLOW	0.
				TIME	.17
			5	FLOW	0.
				TIME	.17
			6	FLOW	0.
				TIME	.17
			** PEAK STAGES IN FEET **		
			1	STAGE	2702.15
				TIME	32.33
			2	STAGE	2705.27
				TIME	33.17
			3	STAGE	2706.47
				TIME	32.83
			4	STAGE	2707.67
				TIME	32.67
			5	STAGE	2709.02
				TIME	33.00
			6	STAGE	2710.20
				TIME	33.33
HYDROGRAPH AT	TL20G	.41	1	FLOW	30.
				TIME	13.33
			2	FLOW	90.
				TIME	13.17
			3	FLOW	137.

				TIME	13.17
			4	FLOW	188.
				TIME	13.17
			5	FLOW	236.
				TIME	13.17
			6	FLOW	286.
				TIME	13.17
3 COMBINED AT	4OUT	67.99	1	FLOW	30.
				TIME	13.33
			2	FLOW	1575.
				TIME	22.00
			3	FLOW	4486.
				TIME	18.00
			4	FLOW	8143.
				TIME	16.17
			5	FLOW	12121.
				TIME	15.83
			6	FLOW	17371.
				TIME	15.33
ROUTED TO	RT14	67.99	1	FLOW	30.
				TIME	14.17
			2	FLOW	1573.
				TIME	22.17
			3	FLOW	4484.
				TIME	18.17
			4	FLOW	8140.
				TIME	16.33
			5	FLOW	12120.
				TIME	16.00
			6	FLOW	17298.
				TIME	15.50
HYDROGRAPH AT	TL20H	2.67	1	FLOW	147.
				TIME	14.00
			2	FLOW	438.
				TIME	13.83
			3	FLOW	671.
				TIME	13.83
			4	FLOW	921.
				TIME	13.83
			5	FLOW	1151.
				TIME	13.83
			6	FLOW	1405.
				TIME	13.83
2 COMBINED AT	HW137X	70.66	1	FLOW	177.
				TIME	14.00
			2	FLOW	1633.
				TIME	22.17
			3	FLOW	4619.
				TIME	18.17
			4	FLOW	8456.
				TIME	16.33
			5	FLOW	12580.
				TIME	16.00
			6	FLOW	18064.
				TIME	15.33

*** NORMAL END OF HEC-1 ***
NORMAL END OF HEC-1

HEC1 S/N: 1090525070   HMVersion: 5.20   Data File: TL-ALT1.HC1

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*****************************************                              ***************************************
*                                       *                              *                                     *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                              *   U.S. ARMY CORPS OF ENGINEERS      *
*             FEBRUARY 1981             *                              * THE HYDROLOGIC ENGINEERING CENTER   *
*           REVISED 02 AUG 88           *                              *        609 SECOND STREET            *
*                                       *                              *      DAVIS, CALIFORNIA 95616        *
*  RUN DATE  09/13/1990  TIME  12:00:45 *                              *                                     *
*                                       *                              *                                     *
*****************************************                              ***************************************
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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X               X
XXXXXXX  XXXX     X       XXXXX   X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX         XXX
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::::::::::::::::::::::::::::::::::::::::::
::::::::::::::::::::::::::::::::::::::::::
:::                                    :::
:::  Full Microcomputer Implementation  :::
:::                by                  :::
:::        Haestad Methods, Inc.       :::
:::                                    :::
::::::::::::::::::::::::::::::::::::::::::
::::::::::::::::::::::::::::::::::::::::::
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37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

              *DIAGRAM
   1          ID    MARTIN COUNTY FLOOD CONTROL STUDY     JOB NO. 06901-001-036
   2          ID    HDR ENGINEERING, INC.                 AUSTIN, TEXAS
   3          ID
   4          ID    THREE LEAGUE AREA MODEL TO HWY 137 CROSSING.  ALTERNATIVE 1 INCORPORATED
   5          ID    INTO MODEL.
   6          ID
   7          ID    COMPUTING 2-YR, 5-YR, 10-YR, 25-YR, 50-YR, AND 100-YR FLOOD EVENTS FOR
   8          ID    THREE LEAGUE AREA USING PLAN OPTION IN HEC-1.
   9          ID
  10          ID            PLAN 1:   2-YEAR EVENT
  11          ID            PLAN 2:   5-YEAR EVENT
  12          ID            PLAN 3:  10-YEAR EVENT
  13          ID            PLAN 4:  25-YEAR EVENT
  14          ID            PLAN 5:  50-YEAR EVENT
  15          ID            PLAN 6: 100-YEAR EVENT
  16          ID
  17          ID
  18          IT      10                      300
  19          IO       5       0
  20          JP       6

  21          KK     TL1
  22          KM    RUNOFF HYDROGRAPH FOR TL1 SUBBASIN
  23          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
  24          BA    4.65
  25          LS       0      72
  26          UD    1.11
  27          KP       2
  28          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
  29          KP       3
  30          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
  31          KP       4
  32          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
  33          KP       5
  34          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
  35          KP       6
  36          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

  37          KK     TL2
  38          KM    RUNOFF HYDROGRAPH FOR TL2 SUBBASIN
  39          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
  40          BA    1.04
  41          LS       0      72
  42          UD    0.87
  43          KP       2
  44          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
  45          KP       3
  46          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
  47          KP       4
  48          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
  49          KP       5
  50          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
  51          KP       6
  52          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9
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LINE	ID	1	2	3	4	5	6	7	8	9	10
53	KK	KDRAW									
54	KM	COMBINE TL1 AND TL2									
55	HC	2									
56	KK	RT1									
57	KM	ROUTE KDRAW TO K2002									
58	RK	15600	.0035	.030		TRAP	50	8			
59	KK	TL3									
60	PH	50	78.9	0.42	0.8	1.4	1.6	1.7	2.1	2.4	2.8
61	BA	3.11									
62	LS	0	72								
63	UD	0.62									
64	KP	2									
65	PH	20	78.9	0.51	1.0	1.9	2.2	2.3	2.8	3.3	3.9
66	KP	3									
67	PH	10	78.9	0.58	1.2	2.2	2.6	2.8	3.4	3.9	4.6
68	KP	4									
69	PH	4	78.9	0.67	1.4	2.6	3.1	3.3	3.8	4.7	5.3
70	KP	5									
71	PH	2	78.9	0.75	1.5	3.0	3.4	3.7	4.4	5.3	6.1
72	KP	6									
73	PH	1	78.9	0.82	1.7	3.3	3.8	4.2	5.1	5.9	6.9
74	KK	K2002									
75	KM	COMBINE RT1 WITH TL3									
76	HC	2									
77	KK	TL7									
78	KM	RUNOFF HYDROGRAPH FOR TL7 SUBBASIN									
79	PH	50	78.9	0.42	0.8	1.4	1.6	1.7	2.1	2.4	2.8
80	BA	3.39									
81	LS	0	72								
82	UD	0.65									
83	KP	2									
84	PH	20	78.9	0.51	1.0	1.9	2.2	2.3	2.8	3.3	3.9
85	KP	3									
86	PH	10	78.9	0.58	1.2	2.2	2.6	2.8	3.4	3.9	4.6
87	KP	4									
88	PH	4	78.9	0.67	1.4	2.6	3.1	3.3	3.8	4.7	5.3
89	KP	5									
90	PH	2	78.9	0.75	1.5	3.0	3.4	3.7	4.4	5.3	6.1
91	KP	6									
92	PH	1	78.9	0.82	1.7	3.3	3.8	4.2	5.1	5.9	6.9
93	KK	TL8									
94	KM	RUNOFF HYDROGRAPH FOR TL8 SUBBASIN									
95	PH	50	78.9	0.42	0.8	1.4	1.6	1.7	2.1	2.4	2.8
96	BA	0.55									
97	LS	0	72								
98	UD	0.28									
99	KP	2									
100	PH	20	78.9	0.51	1.0	1.9	2.2	2.3	2.8	3.3	3.9
101	KP	3									

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 102          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 103          KP       4
 104          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 105          KP       5
 106          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 107          KP       6
 108          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 109          KK    829A
 110          KM    COMBINE TL7 AND TL8
 111          HC       2

 112          KK     RT2
 113          KM    ROUTE 829A TO 2002W
 114          RK    8200   .0052    .030            TRAP      20       6

 115          KK     TL9
 116          KM    RUNOFF HYDROGRAPH FOR TL9 SUBBASIN
 117          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 118          BA    0.93
 119          LS       0      72
 120          UD    0.45
 121          KP       2
 122          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 123          KP       3
 124          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 125          KP       4
 126          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 127          KP       5
 128          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 129          KP       6
 130          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 131          KK     RT3
 132          KM    ROUTE TL9 TO 2002W
 133          RK    4000   .0073    .030            TRAP      50       8

 134          KK    TL10
 135          KM    RUNOFF HYDROGRAPH FOR TL10 SUBBASIN
 136          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 137          BA    0.96
 138          LS       0      72
 139          UD    0.38
 140          KP       2
 141          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 142          KP       3
 143          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 144          KP       4
 145          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 146          KP       5
 147          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 148          KP       6
 149          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9
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LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


 150           KK   2002W
 151           KM    COMBINE RT2 WITH RT3 AND TL10
 152           HC       3

 153           KK     RT4
 154           KM    ROUTE 2002W TO PXWEST
 155           RK   10000   .0052    .030            TRAP      50       8

 156           KK    TL12
 157           KM    RUNOFF HYDROGRAPH FOR TL12 SUBBASIN
 158           PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 159           BA    1.60
 160           LS       0      72
 161           UD    0.96
 162           KP       2
 163           PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 164           KP       3
 165           PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 166           KP       4
 167           PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 168           KP       5
 169           PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 170           KP       6
 171           PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 172           KK     RT5
 173           KM    ROUTE TL12 TO PXWEST
 174           RK    6600   .0064    .030            TRAP      50       8

 175           KK    TL13
 176           KM    RUNOFF HYDROGRAPH FOR TL13 SUBBASIN
 177           PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 178           BA    3.99
 179           LS       0      72
 180           UD    1.23
 181           KP       2
 182           PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 183           KP       3
 184           PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 185           KP       4
 186           PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 187           KP       5
 188           PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 189           KP       6
 190           PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 191           KK     RT6
 192           KM    ROUTE TL13 TO PXWEST
 193           RK    9600   .0052    .030            TRAP      50       8
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 194          KK    TL11
 195          KM    RUNOFF HYDROGRAPH FOR TL11 SUBBASIN
 196          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 197          BA    4.28
 198          LS       0      72
 199          UD    1.18
 200          KP       2
 201          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 202          KP       3
 203          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 204          KP       4
 205          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 206          KP       5
 207          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 208          KP       6
 209          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 210          KK  PXWEST
 211          KM    COMBINE RT5 WITH RT6 AND RT4
 212          HC       4

 213          KK    TL6A
 214          KM    RUNOFF HYDROGRAPH FOR TL6A SUBBASIN
 215          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 216          BA    2.53
 217          LS       0      72
 218          UD    0.86
 219          KP       2
 220          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 221          KP       3
 222          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 223          KP       4
 224          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 225          KP       5
 226          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 227          KP       6
 228          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 229          KK     RT7
 230          KM    ROUTE TL6A TO PXNW
 231          RK    9000   .0048    .030            TRAP      50       8

 232          KK    TL6B
 233          KM    RUNOFF HYDROGRAPH FOR TL6B SUBBASIN
 234          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 235          BA    0.85
 236          LS       0      72
 237          UD    0.46
 238          KP       2
 239          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 240          KP       3
 241          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 242          KP       4
 243          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 244        KP       5
 245        PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 246        KP       6
 247        PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 248        KK    PXNW
 249        KM    COMBINE RT7 WITH TL6B
 250        HC       2

 251        KK    TL4A
 252        KM    RUNOFF HYDROGRAPH FOR TL4A SUBBASIN
 253        PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 254        BA    4.65
 255        LS       0      72
 256        UD    1.62
 257        KP       2
 258        PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 259        KP       3
 260        PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 261        KP       4
 262        PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 263        KP       5
 264        PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 265        KP       6
 266        PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 267        KK     RT8
 268        KM    ROUTE TL4A TO PXNE
 269        RK    8400   .0045    .030            TRAP      50       8

 270        KK    TL4B
 271        KM    COMPUTE RUNOFF HYDROGRAPH FOR TL4B SUBBASIN
 272        PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 273        BA    0.52
 274        LS       0      72
 275        UD    0.79
 276        KP       2
 277        PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 278        KP       3
 279        PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 280        KP       4
 281        PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 282        KP       5
 283        PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 284        KP       6
 285        PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 286        KK    PXNE
 287        KM    COMBINE RT8 WITH TL4B
 288        HC       2
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


 289          KK     TL5
 290          KM     RUNOFF HYDROGRAPH FOR TL5 SUBBASIN
 291          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 292          BA    1.88
 293          LS       0      72
 294          UD    0.52
 295          KP       2
 296          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 297          KP       3
 298          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 299          KP       4
 300          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 301          KP       5
 302          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 303          KP       6
 304          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 305          KK  PLAYAX
 306          KM     COMBINE K2002 - TL5 - PXNE - PXNW - PXWEST
 307          HC       5

 308          KK    TL14
 309          KM     RUNOFF HYDROGRAPH FOR TL14 SUBBASIN
 310          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 311          BA   12.70
 312          LS       0      72
 313          UD    1.29
 314          KP       2
 315          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 316          KP       3
 317          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 318          KP       4
 319          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 320          KP       5
 321          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 322          KP       6
 323          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 324          KK    RT10
 325          RK   12000   .0040    .030            TRAP      20       6

 326          KK    TL16
 327          KM     RUNOFF HYDROGRAPH FOR TL16 SUBBASIN
 328          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 329          BA    2.86
 330          LS       0      72
 331          UD    0.90
 332          KP       2
 333          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 334          KP       3
 335          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 336          KP       4
 337          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 338          KP       5
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ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
KP       6
PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

KK    TLIN
KM     COMBINE FLOWS THAT WOULD NORMALLY BYPASS BELOW TLPLAY WITH FLOWS THAT
KM     ENTER TLPLAY.
HC       3

KK  TLPLAY
KM    ROUTE INFLOW HYDROGRAPH THROUGH THREE LEAGUE PLAYA
RS       1    ELEV    2725
SV       0     362    1172    2679    5066    7453
SE    2725    2730    2735    2740    2745    2750
SL    2725    7.06     0.7
SS    2745     500     2.6     1.5

KK   ALKRD
KM    ROUTE TLPLAY OUTFLOW TO ALKRD
RK    4000   .0030    .030            TRAP      20       6

KK    RT11
KM    ROUTE ALKDRD TO ALKALI
RK    5000   .0020    .030            TRAP      20       6

KK    TL18
KM    RUNOFF HYDROGRAPH FOR TL18 SUBBASIN
PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
BA    0.62
LS       0      72
UD    0.51
KP       2
PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
KP       3
PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
KP       4
PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
KP       5
PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
KP       6
PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

KK    TL17
KM    RUNOFF HYDROGRAPH FOR TL17 SUBBASIN
PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
BA    2.42
LS       0      72
UD    0.50
KP       2
PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
KP       3
PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
KP       4
PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
KP       5
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 388          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 389          KP       6
 390          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 391          KK  ALKALI
 392          KM    COMBINE TL18 - RT12 - TL17 AND RT11
 393          HC       3

 394          KK  ALKLAK
 395          KM    ROUTE INFLOW HYDROGRAPH THROUGH ALKALI LAKE
 396          RS       1    ELEV    2708
 397          SV       0      77     346     813    1682    3130
 398          SQ       0       0       0       0   17000  100000
 399          SE    2708    2710    2715    2720    2725    2730

 400          KK   TL20E
 401          KM    RUNOFF HYDROGRAPH FOR TL20E SUBBASIN
 402          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 403          BA    1.53
 404          LS       0      72
 405          UD    2.00
 406          KP       2
 407          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 408          KP       3
 409          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 410          KP       4
 411          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 412          KP       5
 413          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 414          KP       6
 415          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 416          KK   SP1IN
 417          KM    COMBINE ALKLAK OUTFLOW HYDROGRAPH WITH SP1IN
 418          HC       2

 419          KK  SPILL1
 420          KM    ROUTE SP1IN INFLOW HYDROGRAPH THROUGH SPILL1 PLAYA
 421          RS       1    ELEV    2710
 422          SV       0     101     369     837    1495
 423          SQ       0       0       0   14000  100000
 424          SE    2710    2715    2720    2725    2730

 425          KK   TL20F
 426          KM    RUNOFF HYDROGRAPH FOR TL20F SUBBASIN
 427          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 428          BA    0.66
 429          LS       0      72
 430          UD    0.74
 431          KP       2
 432          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 433          KP       3
 434          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 435          KP       4
 436          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 437          KP       5
 438          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 439          KP       6
 440          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 441          KK   SP2IN
 442          KM     COMBINE SPILL1 OUTFLOW HYDROGRAPH WITH TL20F
 443          HC       2

 444          KK  SPILL2
 445          KM     ROUTE SP2IN INFLOW HYDROGRAPH THROUGH SPILL2 PLAYA
 446          RS       1    ELEV    2698
 447          SV       0      14      70     168     350     875
 448          SQ       0       0       0       0    5000  100000
 449          SE    2698    2700    2705    2710    2715    2720

 450          KK    TL19
 451          KM     RUNOFF HYDROGRAPH FOR TL19 SUBBASIN
 452          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 453          BA    4.73
 454          LS       0      72
 455          UD    2.37
 456          KP       2
 457          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 458          KP       3
 459          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 460          KP       4
 461          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 462          KP       5
 463          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 464          KP       6
 465          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 466          KK    RT13
 467          RK    2000   .0050   0.030            TRAP      50       8

 468          KK   TL20A
 469          KM     RUNOFF HYDROGRAPH FOR TL20A SUBBASIN
 470          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 471          BA    1.17
 472          LS       0      72
 473          UD    0.75
 474          KP       2
 475          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 476          KP       3
 477          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 478          KP       4
 479          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 480          KP       5
 481          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 482          KP       6
 483          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9
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ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

KK   TL1IN
KM    COMBINE RT13 WITH TL20A
HC       2

KK  TL20-1
KM    ROUTE TL1IN INFLOW HYDROGRAPH THROUGH TL20-1 PLAYA
RS       1    ELEV    2755
SV       0     351    1286    3240
SQ       0       0       0  100000
SE    2755    2760    2765    2770

KK   TL20B
KM    RUNOFF HYDROGRAPH FOR TL20B SUBBASIN
PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
BA    0.40
LS       0      72
UD    0.67
KP       2
PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
KP       3
PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
KP       4
PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
KP       5
PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
KP       6
PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

KK   TL2IN
KM    COMBINE TL20-1 OUTFLOW HYDROGRAPH WITH TL20B
HC       2

KK  TL20-2
KM    ROUTE TL2IN INFLOW HYDROGRAPH THROUGH TL20-2 PLAYA
RS       1    ELEV    2750
SV       0      56     212     537
SQ       0       0       0  100000
SE    2750    2755    2760    2765

KK    RT15
KM    ROUTE TL20-2 TO TL3IN
RK    6800   .0015    .030            TRAP      50       8

KK   TL20C
KM    RUNOFF HYDROGRAPH FOR TL20C SUBBASIN
PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
BA    3.48
LS       0      72
UD    0.67
KP       2
PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
KP       3
PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
KP       4
```

```
ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
KP       5
PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
KP       6
PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

KK   TL3IN
KM    COMBINE TL20-2 OUTFLOW HYDROGRAPH WITH TL20C
HC       2

KK  TL20-3
KM    ROUTE TL3IN INFLOW HYDROGRAPH THROUGH TL20-3 PLAYA
RS       1    ELEV    2740
SV       0    1198    4620
SQ       0       0  100000
SE    2740    2745    2750

KK    RT16
KM    ROUTE TL20-3 OUTFLOW HYDROGRAPH TO TL4IN
RK    8000   .0038   0.030            TRAP      50       8

KK   TL20D
KM    RUNOFF HYDROGRAPH FOR TL20D SUBBASIN
PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
BA    2.08
LS       0      72
UD    2.00
KP       2
PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
KP       3
PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
KP       4
PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
KP       5
PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
KP       6
PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

KK   TL4IN
KM    COMBINE TL20-3 OUTFLOW HYDROGRAPH WITH TL20D
HC       2

KK  TL20-4
KM    ROUTE TL4IN INFLOW HYDROGRAPH THROUGH TL20-4 PLAYA
RS       1    ELEV    2700
SV       0     112     354     880    1929    3674
SQ       0       0       0       0  100000  200000
SE    2700    2705    2710    2715    2720    2725

KK   TL20G
KM    RUNOFF HYDROGRAPH FOR TL20G SUBBASIN
PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
BA    0.41
LS       0      72
UD    1.00
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 580          KP       2
 581          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 582          KP       3
 583          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 584          KP       4
 585          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 586          KP       5
 587          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 588          KP       6
 589          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 590          KK    4OUT
 591          KM    COMBINE TL20G WITH TL20A AND SPILL2
 592          HC       3

 593          KK    RT14
 594          KM    ROUTE 4OUT TO HWY137 CROSSING
 595          RK    9400   .0050   0.030            TRAP      20       6

 596          KK   TL20H
 597          KM    RUNOFF HYDROGRAPH FOR TL20H SUBBASIN
 598          PH      50    78.9    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 599          BA    2.67
 600          LS       0      72
 601          UD    1.56
 602          KP       2
 603          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 604          KP       3
 605          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 606          KP       4
 607          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 608          KP       5
 609          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 610          KP       6
 611          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 612          KK  HW137X
 613          KM    COMBINE RT14 WITH TL20H
 614          HC       2
 615          ZZ
```

```
                 SCHEMATIC DIAGRAM OF STREAM NETWORK
INPUT
 LINE     (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

  NO.     (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

  21      TL1
            .
            .
  37        .         TL2
            .           .
            .           .
  53      KDRAW............
            V
            V
  56      RT1
            .
            .
  59        .         TL3
            .           .
            .           .
  74      K2002............
            .
            .
  77        .         TL7
            .           .
            .           .
  93        .           .         TL8
            .           .           .
            .           .           .
 109        .        829A............
            .           V
            .           V
 112        .         RT2
            .           .
            .           .
 115        .           .         TL9
            .           .           V
            .           .           V
 131        .           .         RT3
            .           .           .
            .           .           .
 134        .           .           .        TL10
            .           .           .           .
            .           .           .           .
 150        .       2002W........................
            .           V
            .           V
 153        .         RT4
            .           .
            .           .
 156        .           .        TL12
            .           .           V
            .           .           V
 172        .           .         RT5
            .           .           .
            .           .           .
 175        .           .           .        TL13
            .           .           .           V
```

```
              .       .       .       V
191           .       .       .     RT6
              .       .       .       .
              .       .       .       .
194           .       .       .       .    TL11
              .       .       .       .       .
              .       .       .       .       .
210           .  PXWEST.........................
              .       .
              .       .
213           .       .    TL6A
              .       .       V
              .       .       V
229           .       .     RT7
              .       .       .
              .       .       .
232           .       .       .    TL6B
              .       .       .       .
              .       .       .       .
248           .       .    PXNW........
              .       .       .
              .       .       .
251           .       .       .    TL4A
              .       .       .       V
              .       .       .       V
267           .       .       .     RT8
              .       .       .       .
              .       .       .       .
270           .       .       .       .    TL4B
              .       .       .       .       .
              .       .       .       .       .
286           .       .       .    PXNE........
              .       .       .       .
              .       .       .       .
289           .       .       .       .     TL5
              .       .       .       .       .
              .       .       .       .       .
305      PLAYAX.................................
              .
              .
308           .    TL14
              .       V
              .       V
324           .    RT10
              .       .
              .       .
326           .       .    TL16
              .       .       .
              .       .       .
342        TLIN................
              V
              V
346      TLPLAY
              V
              V
353       ALKRD
              V
              V
356        RT11
              .
```

```
              .
359           .        TL18
              .           .
              .           .
375           .           .           TL17
              .           .           .
              .           .           .
391      ALKALI........................
              V
              V
394      ALKLAK
              .
              .
400           .       TL20E
              .           .
              .           .
416       SP1IN............
              V
              V
419      SPILL1
              .
              .
425           .       TL20F
              .           .
              .           .
441       SP2IN............
              V
              V
444      SPILL2
              .
              .
450           .        TL19
              .           V
              .           V
466           .        RT13
              .           .
              .           .
468           .           .          TL20A
              .           .           .
              .           .           .
484           .       TL1IN............
              .           V
              .           V
487           .      TL20-1
              .           .
              .           .
493           .           .          TL20B
              .           .           .
              .           .           .
509           .       TL2IN............
              .           V
              .           V
512           .      TL20-2
              .           V
              .           V
518           .        RT15
              .           .
              .           .
521           .           .          TL20C
              .           .           .
```

```
                .          .          .
537             .      TL3IN............
                .          V
                .          V
540             .     TL20-3
                .          V
                .          V
546             .       RT16
                .          .
                .          .
549             .          .        TL20D
                .          .            .
                .          .            .
565             .      TL4IN............
                .          V
                .          V
568             .     TL20-4
                .          .
                .          .
574             .          .        TL20G
                .          .            .
                .          .            .
590          4OUT.......................
                V
                V
593          RT14
                .
                .
596             .      TL20H
                .          .
                .          .
612        HW137X...........
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

HEC1 S/N: 1090525070   HMVersion: 5.20   Data File: TL-ALT1.HC1

```
*****************************************                          *****************************************
*                                       *                          *                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                          *   U.S. ARMY CORPS OF ENGINEERS        *
*             FEBRUARY 1981             *                          *  THE HYDROLOGIC ENGINEERING CENTER    *
*           REVISED 02 AUG 88           *                          *         609 SECOND STREET             *
*                                       *                          *      DAVIS, CALIFORNIA 95616          *
*  RUN DATE  09/13/1990  TIME  12:00:45 *                          *                                       *
*                                       *                          *                                       *
*****************************************                          *****************************************
```

MARTIN COUNTY FLOOD CONTROL STUDY   JOB NO. 06901-001-036
HDR ENGINEERING, INC.   AUSTIN, TEXAS

THREE LEAGUE AREA MODEL TO HWY 137 CROSSING. ALTERNATIVE 1 INCORPORATED INTO MODEL.

COMPUTING 2-YR, 5-YR, 10-YR, 25-YR, 50-YR, AND 100-YR FLOOD EVENTS FOR THREE LEAGUE AREA USING PLAN OPTION IN HEC-1.

```
          PLAN 1:   2-YEAR EVENT
          PLAN 2:   5-YEAR EVENT
          PLAN 3:  10-YEAR EVENT
          PLAN 4:  25-YEAR EVENT
          PLAN 5:  50-YEAR EVENT
          PLAN 6: 100-YEAR EVENT
```

```
  19 IO         OUTPUT CONTROL VARIABLES
                      IPRNT          5  PRINT CONTROL
                      IPLOT          0  PLOT CONTROL
                      QSCAL         0.  HYDROGRAPH PLOT SCALE

     IT         HYDROGRAPH TIME DATA
                       NMIN         10  MINUTES IN COMPUTATION INTERVAL
                      IDATE      1   0  STARTING DATE
                      ITIME       0000  STARTING TIME
                         NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE      3   0  ENDING DATE
                     NDTIME       0150  ENDING TIME
                     ICENT          19  CENTURY MARK

                COMPUTATION INTERVAL     .17 HOURS
                     TOTAL TIME BASE   49.83 HOURS

          ENGLISH UNITS
              DRAINAGE AREA         SQUARE MILES
              PRECIPITATION DEPTH   INCHES
              LENGTH, ELEVATION     FEET
              FLOW                  CUBIC FEET PER SECOND
              STORAGE VOLUME        ACRE-FEET
              SURFACE AREA          ACRES
              TEMPERATURE           DEGREES FAHRENHEIT
```

```
JP          MULTI-PLAN OPTION
                  NPLAN           6  NUMBER OF PLANS

JR          MULTI-RATIO OPTION
                RATIOS OF RUNOFF
                 1.00


    *** FLOGRD - MAXIMUM NUMBER OF DX INTERVALS REACHED. MDX= 51
     THIS MAY AFFECT ACCURACY OF KW  SOLUTION. TO REDUCE ERRORS SHORTEN CHANNEL ELEMENT = 3
```

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO FLOWS RATIO 1 1.00
HYDROGRAPH AT	TL1	4.65	1	FLOW	320.
				TIME	13.50
			2	FLOW	963.
				TIME	13.33
			3	FLOW	1458.
				TIME	13.33
			4	FLOW	2003.
				TIME	13.33
			5	FLOW	2506.
				TIME	13.33
			6	FLOW	3035.
				TIME	13.33
HYDROGRAPH AT	TL2	1.04	1	FLOW	83.
				TIME	13.17
			2	FLOW	249.
				TIME	13.17
			3	FLOW	375.
				TIME	13.00
			4	FLOW	515.
				TIME	13.00
			5	FLOW	651.
				TIME	13.00
			6	FLOW	786.
				TIME	13.00
2 COMBINED AT	KDRAW	5.69	1	FLOW	396.
				TIME	13.33
			2	FLOW	1198.
				TIME	13.33
			3	FLOW	1808.
				TIME	13.33
			4	FLOW	2481.
				TIME	13.33
			5	FLOW	3109.
				TIME	13.17
			6	FLOW	3768.
				TIME	13.17
ROUTED TO	RT1	5.69	1	FLOW	396.
				TIME	14.17
			2	FLOW	1188.
				TIME	13.83
			3	FLOW	1807.
				TIME	13.83
			4	FLOW	2470.
				TIME	13.67
			5	FLOW	3102.
				TIME	13.67

			6	FLOW	3752.
				TIME	13.67
HYDROGRAPH AT	TL3	3.11	1	FLOW	302.
				TIME	12.83
			2	FLOW	908.
				TIME	12.83
			3	FLOW	1353.
				TIME	12.83
			4	FLOW	1848.
				TIME	12.83
			5	FLOW	2331.
				TIME	12.83
			6	FLOW	2794.
				TIME	12.83
2 COMBINED AT	K2002	8.80	1	FLOW	514.
				TIME	14.17
			2	FLOW	1527.
				TIME	13.67
			3	FLOW	2403.
				TIME	13.67
			4	FLOW	3352.
				TIME	13.50
			5	FLOW	4201.
				TIME	13.50
			6	FLOW	5165.
				TIME	13.33
HYDROGRAPH AT	TL7	3.39	1	FLOW	319.
				TIME	13.00
			2	FLOW	966.
				TIME	12.83
			3	FLOW	1445.
				TIME	12.83
			4	FLOW	1977.
				TIME	12.83
			5	FLOW	2496.
				TIME	12.83
			6	FLOW	2998.
				TIME	12.83
HYDROGRAPH AT	TL8	.55	1	FLOW	77.
				TIME	12.50
			2	FLOW	221.
				TIME	12.50
			3	FLOW	333.
				TIME	12.33
			4	FLOW	456.
				TIME	12.33
			5	FLOW	568.
				TIME	12.33
			6	FLOW	689.
				TIME	12.33
2 COMBINED AT	829A	3.94	1	FLOW	368.
				TIME	12.83
			2	FLOW	1099.
				TIME	12.83
			3	FLOW	1636.

				TIME	12.83
			4	FLOW	2235.
				TIME	12.83
			5	FLOW	2839.
				TIME	12.67
			6	FLOW	3422.
				TIME	12.67
ROUTED TO	RT2	3.94	1	FLOW	367.
				TIME	13.17
			2	FLOW	1091.
				TIME	13.00
			3	FLOW	1633.
				TIME	13.00
			4	FLOW	2235.
				TIME	13.00
			5	FLOW	2833.
				TIME	12.83
			6	FLOW	3420.
				TIME	12.83
HYDROGRAPH AT	TL9	.93	1	FLOW	107.
				TIME	12.67
			2	FLOW	316.
				TIME	12.67
			3	FLOW	467.
				TIME	12.67
			4	FLOW	636.
				TIME	12.67
			5	FLOW	804.
				TIME	12.67
			6	FLOW	961.
				TIME	12.50
ROUTED TO	RT3	.93	1	FLOW	103.
				TIME	12.83
			2	FLOW	312.
				TIME	12.83
			3	FLOW	460.
				TIME	12.67
			4	FLOW	631.
				TIME	12.67
			5	FLOW	798.
				TIME	12.67
			6	FLOW	961.
				TIME	12.67
HYDROGRAPH AT	TL10	.96	1	FLOW	117.
				TIME	12.67
			2	FLOW	351.
				TIME	12.50
			3	FLOW	526.
				TIME	12.50
			4	FLOW	718.
				TIME	12.50
			5	FLOW	905.
				TIME	12.50
			6	FLOW	1088.
				TIME	12.50

3 COMBINED AT	2002W	5.83	1	FLOW	522.
				TIME	13.00
			2	FLOW	1604.
				TIME	12.83
			3	FLOW	2431.
				TIME	12.83
			4	FLOW	3349.
				TIME	12.83
			5	FLOW	4257.
				TIME	12.83
			6	FLOW	5105.
				TIME	12.83
ROUTED TO	RT4	5.83	1	FLOW	520.
				TIME	13.50
			2	FLOW	1596.
				TIME	13.17
			3	FLOW	2383.
				TIME	13.17
			4	FLOW	3308.
				TIME	13.00
			5	FLOW	4236.
				TIME	13.00
			6	FLOW	5101.
				TIME	13.00
HYDROGRAPH AT	TL12	1.60	1	FLOW	121.
				TIME	13.33
			2	FLOW	364.
				TIME	13.17
			3	FLOW	549.
				TIME	13.17
			4	FLOW	753.
				TIME	13.17
			5	FLOW	945.
				TIME	13.17
			6	FLOW	1141.
				TIME	13.17
ROUTED TO	RT5	1.60	1	FLOW	120.
				TIME	13.67
			2	FLOW	361.
				TIME	13.50
			3	FLOW	541.
				TIME	13.33
			4	FLOW	747.
				TIME	13.33
			5	FLOW	941.
				TIME	13.33
			6	FLOW	1139.
				TIME	13.33
HYDROGRAPH AT	TL13	3.99	1	FLOW	257.
				TIME	13.67
			2	FLOW	772.
				TIME	13.50
			3	FLOW	1171.
				TIME	13.50
			4	FLOW	1608.
				TIME	13.50

			5	FLOW	2007.
				TIME	13.50
			6	FLOW	2435.
				TIME	13.50
ROUTED TO	RT6	3.99	1	FLOW	256.
				TIME	14.17
			2	FLOW	771.
				TIME	13.83
			3	FLOW	1165.
				TIME	13.83
			4	FLOW	1597.
				TIME	13.67
			5	FLOW	2005.
				TIME	13.67
			6	FLOW	2435.
				TIME	13.67
HYDROGRAPH AT	TL11	4.28	1	FLOW	282.
				TIME	13.50
			2	FLOW	848.
				TIME	13.50
			3	FLOW	1284.
				TIME	13.50
			4	FLOW	1767.
				TIME	13.33
			5	FLOW	2220.
				TIME	13.33
			6	FLOW	2694.
				TIME	13.33
4 COMBINED AT	PXWEST	15.70	1	FLOW	1110.
				TIME	13.67
			2	FLOW	3325.
				TIME	13.33
			3	FLOW	5026.
				TIME	13.33
			4	FLOW	6882.
				TIME	13.33
			5	FLOW	8636.
				TIME	13.17
			6	FLOW	10459.
				TIME	13.17
HYDROGRAPH AT	TL6A	2.53	1	FLOW	204.
				TIME	13.17
			2	FLOW	609.
				TIME	13.00
			3	FLOW	920.
				TIME	13.00
			4	FLOW	1264.
				TIME	13.00
			5	FLOW	1596.
				TIME	13.00
			6	FLOW	1926.
				TIME	13.00
ROUTED TO	RT7	2.53	1	FLOW	204.
				TIME	13.67
			2	FLOW	609.

				TIME	13.50
			3	FLOW	918.
				TIME	13.33
			4	FLOW	1258.
				TIME	13.33
			5	FLOW	1576.
				TIME	13.33
			6	FLOW	1895.
				TIME	13.33
HYDROGRAPH AT	TL6B	.85	1	FLOW	97.
				TIME	12.67
			2	FLOW	287.
				TIME	12.67
			3	FLOW	424.
				TIME	12.67
			4	FLOW	578.
				TIME	12.67
			5	FLOW	731.
				TIME	12.67
			6	FLOW	873.
				TIME	12.67
2 COMBINED AT	PXNW	3.38	1	FLOW	239.
				TIME	13.67
			2	FLOW	733.
				TIME	13.33
			3	FLOW	1114.
				TIME	13.33
			4	FLOW	1543.
				TIME	13.17
			5	FLOW	1937.
				TIME	13.17
			6	FLOW	2351.
				TIME	13.17
HYDROGRAPH AT	TL4A	4.65	1	FLOW	250.
				TIME	14.17
			2	FLOW	741.
				TIME	14.00
			3	FLOW	1135.
				TIME	13.83
			4	FLOW	1560.
				TIME	13.83
			5	FLOW	1955.
				TIME	13.83
			6	FLOW	2388.
				TIME	13.83
ROUTED TO	RT8	4.65	1	FLOW	250.
				TIME	14.67
			2	FLOW	740.
				TIME	14.17
			3	FLOW	1135.
				TIME	14.17
			4	FLOW	1555.
				TIME	14.17
			5	FLOW	1943.
				TIME	14.17
			6	FLOW	2377.

				TIME	14.00
HYDROGRAPH AT	TL4B	.52	1	FLOW	44.
				TIME	13.17
			2	FLOW	133.
				TIME	13.00
			3	FLOW	199.
				TIME	13.00
			4	FLOW	273.
				TIME	13.00
			5	FLOW	343.
				TIME	13.00
			6	FLOW	413.
				TIME	13.00
2 COMBINED AT	PXNE	5.17	1	FLOW	269.
				TIME	14.50
			2	FLOW	793.
				TIME	14.17
			3	FLOW	1218.
				TIME	14.17
			4	FLOW	1664.
				TIME	14.00
			5	FLOW	2092.
				TIME	14.00
			6	FLOW	2563.
				TIME	14.00
HYDROGRAPH AT	TL5	1.88	1	FLOW	200.
				TIME	12.83
			2	FLOW	600.
				TIME	12.67
			3	FLOW	897.
				TIME	12.67
			4	FLOW	1226.
				TIME	12.67
			5	FLOW	1552.
				TIME	12.67
			6	FLOW	1863.
				TIME	12.67
5 COMBINED AT	PLAYAX	34.93	1	FLOW	2031.
				TIME	14.00
			2	FLOW	6331.
				TIME	13.50
			3	FLOW	9743.
				TIME	13.50
			4	FLOW	13577.
				TIME	13.33
			5	FLOW	17015.
				TIME	13.33
			6	FLOW	20725.
				TIME	13.17
HYDROGRAPH AT	TL14	12.70	1	FLOW	793.
				TIME	13.67
			2	FLOW	2375.
				TIME	13.50
			3	FLOW	3617.
				TIME	13.50

			4	FLOW	4973.
				TIME	13.50
			5	FLOW	6226.
				TIME	13.50
			6	FLOW	7565.
				TIME	13.50
ROUTED TO	RT10	12.70	1	FLOW	789.
				TIME	14.17
			2	FLOW	2372.
				TIME	13.83
			3	FLOW	3601.
				TIME	13.83
			4	FLOW	4931.
				TIME	13.83
			5	FLOW	6188.
				TIME	13.67
			6	FLOW	7533.
				TIME	13.67
HYDROGRAPH AT	TL16	2.86	1	FLOW	224.
				TIME	13.17
			2	FLOW	675.
				TIME	13.17
			3	FLOW	1012.
				TIME	13.17
			4	FLOW	1387.
				TIME	13.17
			5	FLOW	1747.
				TIME	13.00
			6	FLOW	2113.
				TIME	13.00
3 COMBINED AT	TLIN	50.49	1	FLOW	2961.
				TIME	14.00
			2	FLOW	9043.
				TIME	13.50
			3	FLOW	13965.
				TIME	13.50
			4	FLOW	19242.
				TIME	13.50
			5	FLOW	24142.
				TIME	13.33
			6	FLOW	29480.
				TIME	13.33
ROUTED TO	TLPLAY	50.49	1	FLOW	119.
				TIME	27.00
			2	FLOW	155.
				TIME	27.17
			3	FLOW	169.
				TIME	27.33
			4	FLOW	923.
				TIME	25.17
			5	FLOW	2833.
				TIME	20.00
			6	FLOW	5259.
				TIME	17.33

** PEAK STAGES IN FEET **

			1	STAGE	2734.11
				TIME	27.00
			2	STAGE	2740.35
				TIME	27.17
			3	STAGE	2743.26
				TIME	27.33
			4	STAGE	2745.68
				TIME	25.17
			5	STAGE	2746.60
				TIME	20.00
			6	STAGE	2747.48
				TIME	17.33
ROUTED TO	ALKRD	50.49	1	FLOW	119.
				TIME	27.17
			2	FLOW	155.
				TIME	27.50
			3	FLOW	169.
				TIME	27.50
			4	FLOW	923.
				TIME	25.33
			5	FLOW	2832.
				TIME	20.00
			6	FLOW	5257.
				TIME	17.50
ROUTED TO	RT11	50.49	1	FLOW	119.
				TIME	27.50
			2	FLOW	155.
				TIME	27.83
			3	FLOW	169.
				TIME	27.83
			4	FLOW	922.
				TIME	25.50
			5	FLOW	2832.
				TIME	20.17
			6	FLOW	5252.
				TIME	17.67
HYDROGRAPH AT	TL18	.62	1	FLOW	66.
				TIME	12.83
			2	FLOW	200.
				TIME	12.67
			3	FLOW	299.
				TIME	12.67
			4	FLOW	408.
				TIME	12.67
			5	FLOW	516.
				TIME	12.67
			6	FLOW	619.
				TIME	12.67
HYDROGRAPH AT	TL17	2.42	1	FLOW	261.
				TIME	12.67
			2	FLOW	788.
				TIME	12.67
			3	FLOW	1175.
				TIME	12.67
			4	FLOW	1604.
				TIME	12.67

			5	FLOW	2030.
				TIME	12.67
			6	FLOW	2433.
				TIME	12.67
3 COMBINED AT	ALKALI	53.53	1	FLOW	326.
				TIME	12.67
			2	FLOW	988.
				TIME	12.67
			3	FLOW	1474.
				TIME	12.67
			4	FLOW	2013.
				TIME	12.67
			5	FLOW	2960.
				TIME	20.17
			6	FLOW	5472.
				TIME	17.50
ROUTED TO	ALKLAK	53.53	1	FLOW	0.
				TIME	.17
			2	FLOW	0.
				TIME	.17
			3	FLOW	0.
				TIME	.17
			4	FLOW	595.
				TIME	28.50
			5	FLOW	2778.
				TIME	21.50
			6	FLOW	5095.
				TIME	18.83
			** PEAK STAGES IN FEET **		
			1	STAGE	2715.60
				TIME	49.83
			2	STAGE	2718.05
				TIME	49.83
			3	STAGE	2719.44
				TIME	49.83
			4	STAGE	2720.18
				TIME	28.50
			5	STAGE	2720.82
				TIME	21.50
			6	STAGE	2721.50
				TIME	18.83
HYDROGRAPH AT	TL20E	1.53	1	FLOW	72.
				TIME	14.67
			2	FLOW	210.
				TIME	14.33
			3	FLOW	325.
				TIME	14.33
			4	FLOW	443.
				TIME	14.33
			5	FLOW	556.
				TIME	14.33
			6	FLOW	682.
				TIME	14.33
2 COMBINED AT	SP1IN	55.06	1	FLOW	72.
				TIME	14.67

			2	FLOW	210.
				TIME	14.33
			3	FLOW	325.
				TIME	14.33
			4	FLOW	598.
				TIME	28.50
			5	FLOW	2856.
				TIME	21.50
			6	FLOW	5256.
				TIME	18.67
ROUTED TO	SPILL1	55.06	1	FLOW	0.
				TIME	.17
			2	FLOW	0.
				TIME	.17
			3	FLOW	0.
				TIME	.17
			4	FLOW	296.
				TIME	33.17
			5	FLOW	2774.
				TIME	22.33
			6	FLOW	5127.
				TIME	19.33
			** PEAK STAGES IN FEET **		
			1	STAGE	2711.75
				TIME	32.83
			2	STAGE	2714.56
				TIME	33.67
			3	STAGE	2715.63
				TIME	32.17
			4	STAGE	2720.11
				TIME	33.17
			5	STAGE	2720.99
				TIME	22.33
			6	STAGE	2721.83
				TIME	19.33
HYDROGRAPH AT	TL20F	.66	1	FLOW	58.
				TIME	13.00
			2	FLOW	174.
				TIME	13.00
			3	FLOW	260.
				TIME	13.00
			4	FLOW	356.
				TIME	13.00
			5	FLOW	451.
				TIME	12.83
			6	FLOW	544.
				TIME	12.83
2 COMBINED AT	SP2IN	55.72	1	FLOW	58.
				TIME	13.00
			2	FLOW	174.
				TIME	13.00
			3	FLOW	260.
				TIME	13.00
			4	FLOW	356.
				TIME	13.00
			5	FLOW	2798.

				TIME	22.33
			6	FLOW	5166.
				TIME	19.33
ROUTED TO	SPILL2	55.72	1	FLOW	0.
				TIME	.17
			2	FLOW	0.
				TIME	.17
			3	FLOW	0.
				TIME	.17
			4	FLOW	185.
				TIME	38.17
			5	FLOW	2711.
				TIME	23.17
			6	FLOW	5056.
				TIME	20.00
			** PEAK STAGES IN FEET **		
			1	STAGE	2700.11
				TIME	27.17
			2	STAGE	2702.29
				TIME	27.33
			3	STAGE	2703.94
				TIME	27.67
			4	STAGE	2710.19
				TIME	38.17
			5	STAGE	2712.71
				TIME	23.17
			6	STAGE	2715.00
				TIME	20.00
HYDROGRAPH AT	TL19	4.73	1	FLOW	202.
				TIME	15.17
			2	FLOW	577.
				TIME	14.83
			3	FLOW	892.
				TIME	14.83
			4	FLOW	1209.
				TIME	14.67
			5	FLOW	1525.
				TIME	14.67
			6	FLOW	1881.
				TIME	14.67
ROUTED TO	RT13	4.73	1	FLOW	202.
				TIME	15.33
			2	FLOW	576.
				TIME	14.83
			3	FLOW	891.
				TIME	14.83
			4	FLOW	1207.
				TIME	14.83
			5	FLOW	1522.
				TIME	14.67
			6	FLOW	1877.
				TIME	14.67
HYDROGRAPH AT	TL20A	1.17	1	FLOW	103.
				TIME	13.00
			2	FLOW	308.

				TIME	13.00
			3	FLOW	459.
				TIME	13.00
			4	FLOW	628.
				TIME	13.00
			5	FLOW	792.
				TIME	12.83
			6	FLOW	957.
				TIME	12.83
2 COMBINED AT	TL1IN	5.90	1	FLOW	239.
				TIME	15.17
			2	FLOW	661.
				TIME	14.83
			3	FLOW	1020.
				TIME	14.67
			4	FLOW	1355.
				TIME	14.67
			5	FLOW	1723.
				TIME	14.50
			6	FLOW	2137.
				TIME	14.50
ROUTED TO	TL20-1	5.90	1	FLOW	0.
				TIME	.17
			2	FLOW	0.
				TIME	.17
			3	FLOW	0.
				TIME	.17
			4	FLOW	0.
				TIME	.17
			5	FLOW	0.
				TIME	.17
			6	FLOW	0.
				TIME	.17
			** PEAK STAGES IN FEET **		
			1	STAGE	2756.94
				TIME	34.83
			2	STAGE	2760.02
				TIME	34.83
			3	STAGE	2760.90
				TIME	34.33
			4	STAGE	2761.78
				TIME	34.67
			5	STAGE	2762.78
				TIME	35.67
			6	STAGE	2763.81
				TIME	35.67
HYDROGRAPH AT	TL20B	.40	1	FLOW	37.
				TIME	13.00
			2	FLOW	112.
				TIME	12.83
			3	FLOW	168.
				TIME	12.83
			4	FLOW	230.
				TIME	12.83
			5	FLOW	291.
				TIME	12.83

			6	FLOW	350.
				TIME	12.83
2 COMBINED AT	TL2IN	6.30	1	FLOW	37.
				TIME	13.00
			2	FLOW	112.
				TIME	12.83
			3	FLOW	168.
				TIME	12.83
			4	FLOW	230.
				TIME	12.83
			5	FLOW	291.
				TIME	12.83
			6	FLOW	350.
				TIME	12.83
ROUTED TO	TL20-2	6.30	1	FLOW	0.
				TIME	.17
			2	FLOW	0.
				TIME	.17
			3	FLOW	0.
				TIME	.17
			4	FLOW	0.
				TIME	.17
			5	FLOW	0.
				TIME	.17
			6	FLOW	0.
				TIME	.17
			** PEAK STAGES IN FEET **		
			1	STAGE	2750.82
				TIME	26.33
			2	STAGE	2752.15
				TIME	26.50
			3	STAGE	2753.15
				TIME	27.00
			4	STAGE	2754.14
				TIME	27.00
			5	STAGE	2755.10
				TIME	26.33
			6	STAGE	2755.52
				TIME	27.17
ROUTED TO	RT15	6.30	1	FLOW	0.
				TIME	.17
			2	FLOW	0.
				TIME	.17
			3	FLOW	0.
				TIME	.17
			4	FLOW	0.
				TIME	.17
			5	FLOW	0.
				TIME	.17
			6	FLOW	0.
				TIME	.17
HYDROGRAPH AT	TL20C	3.48	1	FLOW	324.
				TIME	13.00
			2	FLOW	975.
				TIME	12.83

			3	FLOW	1462.
				TIME	12.83
			4	FLOW	2002.
				TIME	12.83
			5	FLOW	2530.
				TIME	12.83
			6	FLOW	3042.
				TIME	12.83
2 COMBINED AT	TL3IN	9.78	1	FLOW	324.
				TIME	13.00
			2	FLOW	975.
				TIME	12.83
			3	FLOW	1462.
				TIME	12.83
			4	FLOW	2002.
				TIME	12.83
			5	FLOW	2530.
				TIME	12.83
			6	FLOW	3042.
				TIME	12.83
ROUTED TO	TL20-3	9.78	1	FLOW	0.
				TIME	.17
			2	FLOW	0.
				TIME	.17
			3	FLOW	0.
				TIME	.17
			4	FLOW	0.
				TIME	.17
			5	FLOW	0.
				TIME	.17
			6	FLOW	0.
				TIME	.17
			** PEAK STAGES IN FEET **		
			1	STAGE	2740.34
				TIME	26.00
			2	STAGE	2740.87
				TIME	26.67
			3	STAGE	2741.28
				TIME	27.00
			4	STAGE	2741.68
				TIME	26.50
			5	STAGE	2742.14
				TIME	26.50
			6	STAGE	2742.62
				TIME	27.00
ROUTED TO	RT16	9.78	1	FLOW	0.
				TIME	.17
			2	FLOW	0.
				TIME	.17
			3	FLOW	0.
				TIME	.17
			4	FLOW	0.
				TIME	.17
			5	FLOW	0.
				TIME	.17
			6	FLOW	0.

				TIME	.17
HYDROGRAPH AT	TL20D	2.08	1	FLOW	98.
				TIME	14.67
			2	FLOW	286.
				TIME	14.33
			3	FLOW	441.
				TIME	14.33
			4	FLOW	602.
				TIME	14.33
			5	FLOW	756.
				TIME	14.33
			6	FLOW	928.
				TIME	14.33
2 COMBINED AT	TL4IN	11.86	1	FLOW	98.
				TIME	14.67
			2	FLOW	286.
				TIME	14.33
			3	FLOW	441.
				TIME	14.33
			4	FLOW	602.
				TIME	14.33
			5	FLOW	756.
				TIME	14.33
			6	FLOW	928.
				TIME	14.33
ROUTED TO	TL20-4	11.86	1	FLOW	0.
				TIME	.17
			2	FLOW	0.
				TIME	.17
			3	FLOW	0.
				TIME	.17
			4	FLOW	0.
				TIME	.17
			5	FLOW	0.
				TIME	.17
			6	FLOW	0.
				TIME	.17
			** PEAK STAGES IN FEET **		
			1	STAGE	2702.15
				TIME	32.33
			2	STAGE	2705.27
				TIME	33.17
			3	STAGE	2706.47
				TIME	32.83
			4	STAGE	2707.67
				TIME	32.67
			5	STAGE	2709.02
				TIME	33.00
			6	STAGE	2710.20
				TIME	33.33
HYDROGRAPH AT	TL20G	.41	1	FLOW	30.
				TIME	13.33
			2	FLOW	90.
				TIME	13.17
			3	FLOW	137.

				TIME	13.17
			4	FLOW	188.
				TIME	13.17
			5	FLOW	236.
				TIME	13.17
			6	FLOW	286.
				TIME	13.17
3 COMBINED AT	4OUT	67.99	1	FLOW	30.
				TIME	13.33
			2	FLOW	90.
				TIME	13.17
			3	FLOW	137.
				TIME	13.17
			4	FLOW	188.
				TIME	13.17
			5	FLOW	2725.
				TIME	23.17
			6	FLOW	5079.
				TIME	20.00
ROUTED TO	RT14	67.99	1	FLOW	30.
				TIME	14.17
			2	FLOW	90.
				TIME	13.83
			3	FLOW	136.
				TIME	13.67
			4	FLOW	187.
				TIME	13.67
			5	FLOW	2724.
				TIME	23.33
			6	FLOW	5077.
				TIME	20.17
HYDROGRAPH AT	TL20H	2.67	1	FLOW	147.
				TIME	14.00
			2	FLOW	438.
				TIME	13.83
			3	FLOW	671.
				TIME	13.83
			4	FLOW	921.
				TIME	13.83
			5	FLOW	1151.
				TIME	13.83
			6	FLOW	1405.
				TIME	13.83
2 COMBINED AT	HW137X	70.66	1	FLOW	177.
				TIME	14.00
			2	FLOW	528.
				TIME	13.83
			3	FLOW	806.
				TIME	13.83
			4	FLOW	1102.
				TIME	13.83
			5	FLOW	2821.
				TIME	23.33
			6	FLOW	5248.
				TIME	20.17

*** NORMAL END OF HEC-1 ***
NORMAL END OF HEC-1

§

APPENDIX I

HEC1 S/N: 1090525070   HMVersion: 5.20   Data File: TLGIN.HC1

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*****************************************                 ****************************************
*                                       *                 *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                 *   U.S. ARMY CORPS OF ENGINEERS       *
*             FEBRUARY 1981             *                 * THE HYDROLOGIC ENGINEERING CENTER    *
*           REVISED 02 AUG 88           *                 *         609 SECOND STREET            *
*                                       *                 *      DAVIS, CALIFORNIA 95616         *
*  RUN DATE  09/13/1990  TIME  12:58:10 *                 *                                      *
*                                       *                 *                                      *
*****************************************                 ****************************************
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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X               X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX         XXX
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:::::::::::::::::::::::::::::::::::::::::::
:::::::::::::::::::::::::::::::::::::::::::
:::                                     :::
:::  Full Microcomputer Implementation  :::
:::                 by                  :::
:::        Haestad Methods, Inc.        :::
:::                                     :::
:::::::::::::::::::::::::::::::::::::::::::
:::::::::::::::::::::::::::::::::::::::::::
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37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

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LINE      ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

          *DIAGRAM
          ID   MARTIN COUNTY FLOOD CONTROL STUDY     JOB NO. 06901-001-036
          ID   HDR ENGINEERING, INC.                 AUSTIN, TEXAS
          ID
          ID   THREE LEAGUE GIN AREA MODEL
          ID
          ID   COMPUTING 2-YR, 5-YR, 10-YR, 25-YR, 50-YR, AND 100-YR FLOOD EVENTS FOR
          ID   WATERSHED UPSTREAM OF THREE LEAGUE GIN AREA.
          ID
          ID             PLAN 1:   2-YEAR EVENT
          ID             PLAN 2:   5-YEAR EVENT
          ID             PLAN 3:  10-YEAR EVENT
          ID             PLAN 4:  25-YEAR EVENT
          ID             PLAN 5:  50-YEAR EVENT
          ID             PLAN 6: 100-YEAR EVENT
          ID
          ID
          IT      10                     300
          IO       5       0
          JP       6

          KK  TLGIN
          KM   RUNOFF HYDROGRAPH FOR WATERSHED UPSTREAM OF THREE LEAGUE GIN
          PH      50    7.44    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
          BA    5.00
          LS       0      72
          UD    2.54
          KP       2
          PH      20    78.9    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
          KP       3
          PH      10    78.9    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
          KP       4
          PH       4    78.9    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
          KP       5
          PH       2    78.9    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
          KP       6
          PH       1    78.9    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9
          ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

```
INPUT
 LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

  NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

   20       TLGIN

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION
```

HEC1 S/N: 1090525070   HMVersion: 5.20   Data File: TLGIN.HC1

```
*****************************************                  *****************************************
*                                       *                  *                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                  *   U.S. ARMY CORPS OF ENGINEERS        *
*             FEBRUARY 1981             *                  *  THE HYDROLOGIC ENGINEERING CENTER    *
*           REVISED 02 AUG 88           *                  *        609 SECOND STREET              *
*                                       *                  *      DAVIS, CALIFORNIA 95616          *
*  RUN DATE  09/13/1990  TIME  12:58:10 *                  *                                       *
*                                       *                  *                                       *
*****************************************                  *****************************************
```

```
                    MARTIN COUNTY FLOOD CONTROL STUDY     JOB NO. 06901-001-036
                    HDR ENGINEERING, INC.                 AUSTIN, TEXAS

                    THREE LEAGUE GIN AREA MODEL

                    COMPUTING 2-YR, 5-YR, 10-YR, 25-YR, 50-YR, AND 100-YR FLOOD EVENTS FOR
                    WATERSHED UPSTREAM OF THREE LEAGUE GIN AREA.

                              PLAN 1:   2-YEAR EVENT
                              PLAN 2:   5-YEAR EVENT
                              PLAN 3:  10-YEAR EVENT
                              PLAN 4:  25-YEAR EVENT
                              PLAN 5:  50-YEAR EVENT
                              PLAN 6: 100-YEAR EVENT


  18 IO          OUTPUT CONTROL VARIABLES
                       IPRNT          5  PRINT CONTROL
                       IPLOT          0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE

     IT          HYDROGRAPH TIME DATA
                        NMIN         10  MINUTES IN COMPUTATION INTERVAL
                       IDATE      1   0  STARTING DATE
                       ITIME       0000  STARTING TIME
                          NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE      3   0  ENDING DATE
                      NDTIME       0150  ENDING TIME
                       ICENT         19  CENTURY MARK

                  COMPUTATION INTERVAL     .17 HOURS
                       TOTAL TIME BASE   49.83 HOURS

         ENGLISH UNITS
             DRAINAGE AREA          SQUARE MILES
             PRECIPITATION DEPTH    INCHES
             LENGTH, ELEVATION      FEET
             FLOW                   CUBIC FEET PER SECOND
             STORAGE VOLUME         ACRE-FEET
             SURFACE AREA           ACRES
             TEMPERATURE            DEGREES FAHRENHEIT
```

JP MULTI-PLAN OPTION
NPLAN 6 NUMBER OF PLANS

JR MULTI-RATIO OPTION
RATIOS OF RUNOFF
1.00

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO FLOWS RATIO 1 1.00
HYDROGRAPH AT	TLGIN	5.00	1	FLOW	260.
				TIME	15.17
			2	FLOW	581.
				TIME	15.00
			3	FLOW	899.
				TIME	15.00
			4	FLOW	1214.
				TIME	14.83
			5	FLOW	1534.
				TIME	14.83
			6	FLOW	1894.
				TIME	14.83

*** NORMAL END OF HEC-1 ***
NORMAL END OF HEC-1

HEC1 S/N: 1090525070 HMVersion: 5.20 Data File: VALVIEW.HC1

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             FEBRUARY 1981             *
*           REVISED 02 AUG 88           *
*                                       *
*  RUN DATE  09/13/1990  TIME  12:47:51 *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*  THE HYDROLOGIC ENGINEERING CENTER    *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*                                       *
*                                       *
*****************************************
```

```
X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X                X
XXXXXXX  XXXX     X         XXXXX  X
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX   XXXXX          XXX
```

```
::::::::::::::::::::::::::::::::::::::::::
::::::::::::::::::::::::::::::::::::::::::
:::                                    :::
:::  Full Microcomputer Implementation  :::
:::                 by                  :::
:::        Haestad Methods, Inc.        :::
:::                                    :::
::::::::::::::::::::::::::::::::::::::::::
::::::::::::::::::::::::::::::::::::::::::
```

37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

              *DIAGRAM
   1          ID    MARTIN COUNTY FLOOD CONTROL STUDY     JOB NO. 06901-001-036
   2          ID    HDR ENGINEERING, INC.                 AUSTIN, TEXAS
   3          ID
   4          ID    VALLEY VIEW ROAD AREA
   5          ID
   6          ID    COMPUTING 2-YR, 5-YR, 10-YR, 25-YR, 50-YR, AND 100-YR FLOOD EVENTS
   7          ID    FOR VALLEY VIEW ROAD AREA USING PLAN OPTION IN HEC-1.
   8          ID
   9          ID              PLAN 1:   2-YEAR EVENT
  10          ID              PLAN 2:   5-YEAR EVENT
  11          ID              PLAN 3:  10-YEAR EVENT
  12          ID              PLAN 4:  25-YEAR EVENT
  13          ID              PLAN 5:  50-YEAR EVENT
  14          ID              PLAN 6: 100-YEAR EVENT
  15          ID
  16          ID
  17          IT       5                      300
  18          IO       5       0
  19          JP       6

  20          KK     VV1
  21          KM    RUNOFF HYDROGRAPH FOR VV1 SUBBASIN
  22          KP       1
  23          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
  24          BA    0.51
  25          LS       0      72
  26          UD    0.37
  27          KP       2
  28          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
  29          KP       3
  30          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
  31          KP       4
  32          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
  33          KP       5
  34          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
  35          KP       6
  36          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

  37          KK    RT01
  38          KM    ROUTE VV1 RUNOFF HYDROGRAPH TO VV2 OUTLET
  39          RK    5280   .0110   0.030            TRAP       5       1

  40          KK     VV2
  41          KM    RUNOFF HYDROGRAPH FOR VV2 SUBBASIN
  42          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
  43          BA    0.79
  44          LS       0      72
  45          UD    0.54
  46          KP       2
  47          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
  48          KP       3
  49          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
  50          KP       4
  51          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 52           KP       5
 53           PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 54           KP       6
 55           PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 56           KK  VV2OUT
 57           KM    COMBINE RT01 WITH VV2 TO GIVE TOTAL HYDROGRAPH AT VV2 OUTLET
 58           HC       2

 59           KK    RT02
 60           KM    ROUTE VV2OUT TO VV3OUT
 61           RK    5280   .0080   0.030            TRAP       5       1

 62           KK     VV3
 63           KM    RUNOFF HYDROGRAPH FOR VV3 SUBBASIN
 64           PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 65           BA    1.06
 66           LS       0      72
 67           UD    1.04
 68           KP       2
 69           PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 70           KP       3
 71           PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 72           KP       4
 73           PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 74           KP       5
 75           PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 76           KP       6
 77           PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 78           KK  VV3OUT
 79           KM    COMBINE RT02 WITH VV3 TO GIVE TOTAL HYDROGRAPH AT VV3 OUTLET
 80           HC       2

 81           KK    RT03
 82           KM    ROUTE VV3OUT TO VV4OUT
 83           RK    5280   .0070   0.030            TRAP       5       1

 84           KK     VV4
 85           KM    RUNOFF HYDROGRAPH FOR VV4 SUBBASIN
 86           PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 87           BA    1.06
 88           LS       0      72
 89           UD    1.39
 90           KP       2
 91           PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 92           KP       3
 93           PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 94           KP       4
 95           PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 96           KP       5
 97           PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 98           KP       6
 99           PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


 100          KK  VV4OUT
 101          KM    COMBINE RT03 WITH VV4 TO GIVE TOTAL HYDROGRAPH AT VV4OUT
 102          HC       2

 103          KK    RT04
 104          KM    ROUTE VV4OUT TO VV5OUT
 105          RK    5280   .0050   0.030           TRAP       5       1

 106          KK     VV5
 107          KM    RUNOFF HYDROGRAPH FOR VV5 SUBBASIN
 108          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 109          BA    1.08
 110          LS       0      72
 111          UD    1.67
 112          KP       2
 113          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 114          KP       3
 115          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 116          KP       4
 117          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 118          KP       5
 119          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 120          KP       6
 121          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9

 122          KK  VV5OUT
 123          KM    COMBINE RT04 WITH VV5 TO GIVE TOTAL HYDROGRAPH AT VV5 OUTLET
 124          HC       2

 125          KK    RT05
 126          KM    ROUTE VV5OUT TO VV6OUT
 127          RK    5280   .0060   0.030           TRAP       5       1

 128          KK     VV6
 129          KM    RUNOFF HYDROGRAPH FOR VV6 SUBBASIN
 130          PH      50    32.4    0.42     0.8     1.4     1.6     1.7     2.1     2.4     2.8
 131          BA    0.83
 132          LS       0      72
 133          UD    1.25
 134          KP       2
 135          PH      20    32.4    0.51     1.0     1.9     2.2     2.3     2.8     3.3     3.9
 136          KP       3
 137          PH      10    32.4    0.58     1.2     2.2     2.6     2.8     3.4     3.9     4.6
 138          KP       4
 139          PH       4    32.4    0.67     1.4     2.6     3.1     3.3     3.8     4.7     5.3
 140          KP       5
 141          PH       2    32.4    0.75     1.5     3.0     3.4     3.7     4.4     5.3     6.1
 142          KP       6
 143          PH       1    32.4    0.82     1.7     3.3     3.8     4.2     5.1     5.9     6.9
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


 144        KK  VV6OUT
 145        KM    COMBINE RT05 WITH VV6 TO GIVE TOTAL HYDROGRAPH AT VV6 OUTLET
 146        HC       2
 147        ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

```
INPUT
LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

 NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

  20        VV1
             V
             V
  37        RT01
             .
             .
  40         .          VV2
             .           .
             .           .
  56      VV2OUT............
             V
             V
  59        RT02
             .
             .
  62         .          VV3
             .           .
             .           .
  78      VV3OUT............
             V
             V
  81        RT03
             .
             .
  84         .          VV4
             .           .
             .           .
 100      VV4OUT............
             V
             V
 103        RT04
             .
             .
 106         .          VV5
             .           .
             .           .
 122      VV5OUT............
             V
             V
 125        RT05
             .
             .
 128         .          VV6
             .           .
             .           .
 144      VV6OUT............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
HEC1 S/N: 1090525070       HMVersion: 5.20    Data File: VALVIEW.HC1

*****************************************                                                      *****************************************
*                                       *                                                      *                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                      *   U.S. ARMY CORPS OF ENGINEERS        *
*             FEBRUARY 1981             *                                                      *  THE HYDROLOGIC ENGINEERING CENTER    *
*           REVISED 02 AUG 88           *                                                      *         609 SECOND STREET             *
*                                       *                                                      *      DAVIS, CALIFORNIA 95616          *
*  RUN DATE  09/13/1990  TIME  12:47:51 *                                                      *                                       *
*                                       *                                                      *                                       *
*****************************************                                                      *****************************************


                    MARTIN COUNTY FLOOD CONTROL STUDY      JOB NO. 06901-001-036
                    HDR ENGINEERING, INC.                  AUSTIN, TEXAS

                    VALLEY VIEW ROAD AREA

                    COMPUTING 2-YR, 5-YR, 10-YR, 25-YR, 50-YR, AND 100-YR FLOOD EVENTS
                    FOR VALLEY VIEW ROAD AREA USING PLAN OPTION IN HEC-1.

                              PLAN 1:   2-YEAR EVENT
                              PLAN 2:   5-YEAR EVENT
                              PLAN 3:  10-YEAR EVENT
                              PLAN 4:  25-YEAR EVENT
                              PLAN 5:  50-YEAR EVENT
                              PLAN 6: 100-YEAR EVENT


  18 IO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE

     IT          HYDROGRAPH TIME DATA
                        NMIN           5  MINUTES IN COMPUTATION INTERVAL
                       IDATE       1   0  STARTING DATE
                       ITIME        0000  STARTING TIME
                          NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE       2   0  ENDING DATE
                      NDTIME        0055  ENDING TIME
                       ICENT          19  CENTURY MARK

                COMPUTATION INTERVAL     .08 HOURS
                     TOTAL TIME BASE   24.92 HOURS

        ENGLISH UNITS
             DRAINAGE AREA          SQUARE MILES
             PRECIPITATION DEPTH    INCHES
             LENGTH, ELEVATION      FEET
             FLOW                   CUBIC FEET PER SECOND
             STORAGE VOLUME         ACRE-FEET
             SURFACE AREA           ACRES
             TEMPERATURE            DEGREES FAHRENHEIT
```

```
JP          MULTI-PLAN OPTION
                  NPLAN            6  NUMBER OF PLANS

JR          MULTI-RATIO OPTION
                RATIOS OF RUNOFF
                 1.00
```

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO FLOWS RATIO 1 1.00
HYDROGRAPH AT	VV1	.51	1	FLOW	84.
				TIME	12.50
			2	FLOW	240.
				TIME	12.50
			3	FLOW	356.
				TIME	12.50
			4	FLOW	482.
				TIME	12.50
			5	FLOW	602.
				TIME	12.50
			6	FLOW	727.
				TIME	12.42
ROUTED TO	RT01	.51	1	FLOW	84.
				TIME	12.67
			2	FLOW	238.
				TIME	12.58
			3	FLOW	356.
				TIME	12.58
			4	FLOW	482.
				TIME	12.58
			5	FLOW	602.
				TIME	12.58
			6	FLOW	725.
				TIME	12.50
HYDROGRAPH AT	VV2	.79	1	FLOW	106.
				TIME	12.75
			2	FLOW	307.
				TIME	12.67
			3	FLOW	456.
				TIME	12.67
			4	FLOW	620.
				TIME	12.67
			5	FLOW	780.
				TIME	12.67
			6	FLOW	935.
				TIME	12.67
2 COMBINED AT	VV2OUT	1.30	1	FLOW	189.
				TIME	12.75
			2	FLOW	541.
				TIME	12.67
			3	FLOW	803.
				TIME	12.58
			4	FLOW	1092.
				TIME	12.58
			5	FLOW	1372.
				TIME	12.58

			6	FLOW	1650.
				TIME	12.58
ROUTED TO	RT02	1.30	1	FLOW	189.
				TIME	12.83
			2	FLOW	539.
				TIME	12.75
			3	FLOW	798.
				TIME	12.67
			4	FLOW	1092.
				TIME	12.67
			5	FLOW	1370.
				TIME	12.67
			6	FLOW	1645.
				TIME	12.67
HYDROGRAPH AT	VV3	1.06	1	FLOW	93.
				TIME	13.33
			2	FLOW	272.
				TIME	13.25
			3	FLOW	407.
				TIME	13.25
			4	FLOW	556.
				TIME	13.17
			5	FLOW	699.
				TIME	13.17
			6	FLOW	843.
				TIME	13.17
2 COMBINED AT	VV3OUT	2.36	1	FLOW	261.
				TIME	12.92
			2	FLOW	743.
				TIME	12.83
			3	FLOW	1099.
				TIME	12.75
			4	FLOW	1497.
				TIME	12.75
			5	FLOW	1886.
				TIME	12.75
			6	FLOW	2263.
				TIME	12.75
ROUTED TO	RT03	2.36	1	FLOW	260.
				TIME	13.08
			2	FLOW	741.
				TIME	12.92
			3	FLOW	1098.
				TIME	12.83
			4	FLOW	1496.
				TIME	12.83
			5	FLOW	1883.
				TIME	12.83
			6	FLOW	2256.
				TIME	12.83
HYDROGRAPH AT	VV4	1.06	1	FLOW	75.
				TIME	13.75
			2	FLOW	220.
				TIME	13.58
			3	FLOW	333.

				TIME	13.58
			4	FLOW	455.
				TIME	13.58
			5	FLOW	568.
				TIME	13.58
			6	FLOW	689.
				TIME	13.58
2 COMBINED AT	VV4OUT	3.42	1	FLOW	313.
				TIME	13.17
			2	FLOW	889.
				TIME	13.00
			3	FLOW	1317.
				TIME	12.92
			4	FLOW	1788.
				TIME	12.92
			5	FLOW	2252.
				TIME	12.92
			6	FLOW	2701.
				TIME	12.92
ROUTED TO	RT04	3.42	1	FLOW	312.
				TIME	13.25
			2	FLOW	887.
				TIME	13.08
			3	FLOW	1314.
				TIME	13.08
			4	FLOW	1788.
				TIME	13.00
			5	FLOW	2250.
				TIME	13.00
			6	FLOW	2698.
				TIME	12.92
HYDROGRAPH AT	VV5	1.08	1	FLOW	67.
				TIME	14.08
			2	FLOW	195.
				TIME	13.92
			3	FLOW	296.
				TIME	13.92
			4	FLOW	405.
				TIME	13.92
			5	FLOW	505.
				TIME	13.83
			6	FLOW	616.
				TIME	13.83
2 COMBINED AT	VV5OUT	4.50	1	FLOW	360.
				TIME	13.33
			2	FLOW	1016.
				TIME	13.17
			3	FLOW	1504.
				TIME	13.08
			4	FLOW	2043.
				TIME	13.08
			5	FLOW	2568.
				TIME	13.08
			6	FLOW	3086.
				TIME	13.00

ROUTED TO	RT05	4.50	1	FLOW	359.
				TIME	13.50
			2	FLOW	1015.
				TIME	13.25
			3	FLOW	1503.
				TIME	13.17
			4	FLOW	2042.
				TIME	13.17
			5	FLOW	2563.
				TIME	13.17
			6	FLOW	3085.
				TIME	13.08
HYDROGRAPH AT	VV6	.83	1	FLOW	64.
				TIME	13.58
			2	FLOW	186.
				TIME	13.42
			3	FLOW	281.
				TIME	13.42
			4	FLOW	384.
				TIME	13.42
			5	FLOW	481.
				TIME	13.42
			6	FLOW	582.
				TIME	13.42
2 COMBINED AT	VV6OUT	5.33	1	FLOW	423.
				TIME	13.50
			2	FLOW	1196.
				TIME	13.33
			3	FLOW	1773.
				TIME	13.25
			4	FLOW	2405.
				TIME	13.25
			5	FLOW	3021.
				TIME	13.17
			6	FLOW	3630.
				TIME	13.17

*** NORMAL END OF HEC-1 ***

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